H.R. 6389 AND H.R. 6391—UREA-FORMALDEHYDE FOAM INSULATION

HEARING

BEFORE THE

SUBCOMMITTEE ON ENERGY, ENVIRONMENT, AND SAFETY ISSUES AFFECTING SMALL BUSINESS

OF THE

COMMITTEE ON SMALL BUSINESS HOUSE OF REPRESENTATIVES

NINETY-SEVENTH CONGRESS

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H.R. 6389 AND H.R. 6391—UREA-FORMALDEHYDE FOAM INSULATION

WEDNESDAY, AUGUST 4, 1982

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ENERGY, ENVIRONMENT, AND
SAFETY ISSUES AFFECTING SMALL BUSINESS,
COMMITTEE ON SMALL BUSINESS,
Washington, D.C.

The subcommittee met, pursuant to notice, at 9:35 a.m., in room 2359–A, Rayburn House Office Building, Hon. Berkley Bedell (chairman of the subcommittee) presiding.

OPENING STATEMENT OF CHAIRMAN BEDELL

Mr. BEDELL. The subcommittee will come to order.

The Small Business Subcommittee on Energy, Environment, and Safety Issues Affecting Small Business meets this morning to consider two bills that were introduced by our ranking minority member, Mr. Silvio Conte, H.R. 6389 and H.R. 6391 concern urea-formaldehyde foam insulation. [See appendix A.]

Both bills contain a provision allowing homeowners to obtain low-interest loans of up to $10,000 each from the SBA's disaster assistance loan program, for the purpose of removing and replacing UF foam insulation. Both bills also provide that the SBA may make loans available to manufacturers and to installers of UF foam insulation so that they can move into other lines of business.

H.R. 6391 contains additional sections which amend the Internal Revenue Code. This committee has a joint referral with the Ways and Means Committee for H.R. 6391, and so we will defer to them on those provisions which pertain to the tax laws.

Today's discussion results, of course, from the Consumer Product Safety Commission's recent decision to ban the future installation of UF foam insulation. The history of the debate over UF insulation is laid out very clearly and concisely in a "mini brief" prepared by the Library of Congress. Copies were distributed last month to all members of the subcommittee and a copy will be included in the hearing record, if there are no objections.

[See appendix B.]

Mr. BEDELL. Mr. Conte, do you have a statement?

OPENING STATEMENT OF HON. SILVIO O. CONTE, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MASSACHUSETTS

Mr. CONTE. Thank you, Mr. Chairman.

As a member of the subcommittee, and also as a member of the Appropriations Subcommittee on Health and Human Services, one of the areas that I care most deeply about is the health and welfare of people. We are living in a time when new chemicals and substances are being introduced into the environment by the thousands. Oftentimes, it is only after a substance has been used extensively that harmful effects are discovered, and only then do we face up to the question of responsibility.

Like it or not, that is the situation with urea-formaldehyde foam insulation. In response to the energy crisis, economic and tax incentives to save energy, an estimated 500,000 homeowners insulated their homes with UF foam between 1975 and 1981. It was easy to install, fairly inexpensive, and it was ideal to put in older homes.

Only after widespread use of this insulation were warnings raised as to potentially harmful consequences resulting from leakage of formaldehyde into the interior household environment. Reactions ranging from mild allergic symptoms to severe illness were reported. The States of Massachusetts, Connecticut, Colorado, Minnesota and others took action to prohibit or discourage further installation of UF foam. Canada banned the substance altogether and initiated a policy of providing grants of $5,000 to homeowners for removal of the foam.

After a 3-year study, the Consumer Product Safety Commission voted 4 to 1 to ban the substance on February 22 of this year. The rationale for this decision, published in the Federal Register of April 2, is 55 pages long. The list of studies on which the decision was based contains 202 items. The CPSC concluded that individuals can experience adverse reactions to any level of formaldehyde and therefore they concluded had no choice but to ban all future use of the insulation. They also concluded that studies showed formaldehyde was a potential carcinogen.

However much we may agree or disagree with the actions of the CPSC and the States, the question remains what do we do about the people living in houses already insulated with UF foam? Some cannot live in their homes because of the health effects they have experienced, and I understand some of the witnesses today will testify on the severity of the health problems that can result.

In addition, houses insulated with UF foam have experienced marked devaluation. Some homeowners feel they have lost a lifetime investment because of their decision to try to conserve energy with this type of insulation.

In my own district, Home Equity, Inc., the real estate firm used by General Electric Co. to purchase homes from employees transferring to other areas, has adopted an official policy that it will not purchase a home that has been insulated with UF foam. I have that notice here and I will submit it for the record, Mr. Chairman. The city of Pittsfield, my hometown, has reduced property valuations of UF foam insulated houses by 25 percent. I have been told that real estate agents will not even waste their time with these houses.

The needs of these people cannot be ignored. Removal of UF foam, a remedy of last resort, can cost between $6,000 and $20,000 because of the need to tear out the walls to remove it. This

is far too much for low- and middle-income homeowners, two groups that used this insulation method extensively.

It is for these compelling health and economic reasons that I introduced the legislation that the subcommittee has before it today. This legislation would provide low-interest loans up to a maximum of $10,000 to help finance removal costs. It would also create a presumption that the removal costs qualify as a medical tax deduction and provide a small additional energy conservation tax credit for replacement insulation. There is also a small authorization for loans to small businesses put out of operation by the CPSC ban.

If there were other resources that homeowners could turn to, I would hesitate to push forward with this legislation, but it appears there is not. Insurance, I have been informed, will not cover this situation. Attempts to recover on a product liability basis are bogged down in court, and the largest manufacturer, RAPCO, has filed for bankruptcy.

It is my understanding that the disaster loan revolving fund, the source for the proposed interest loans, has over $600 million in unobligated available funds, which I believe would be more than adequate to cover any possible demand for these loans, so that additional appropriations for this program would not be needed.

In light of the need for assistance in this situation, in light of the fact that the Government would be providing loans that would be repaid, and in light of the availability of money to make the loans, I believe there is every reason to make assistance available. For many people, this assistance could be the only way to get out of a situation they did not ask for, and over which they had no control.

Mr. Chairman, I have mentioned a number of items in these remarks. I would like at this point to introduce the full text of these references.

I would also like to take this opportunity to thank the chairman for his interest in this matter, and for the cooperation he has so graciously extended to agree to hold these hearings. I know how busy he is and I greatly appreciate this opportunity. It has been a real pleasure, Mr. Chairman, serving with you on this subcommittee in this Congress, and I hope the next Congress will find both of us sitting up here again.

Mr. BEDELL. Thank you, Mr. Conte. I certainly agree with your last remarks, in regard to the pleasure of serving with you.

Did you have some correspondence you wanted to be included in the record?

Mr. CONTE. Yes.

Mr. BEDELL. Without objection, those will be included in the record.

[See appendix C, exhibits 1–6.]

Mr. BEDELL. Mr. Hiler.

OPENING STATEMENT OF HON. JOHN HILER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF INDIANA

Mr. HILER. Thank you, Mr. Chairman.

Mr. Chairman, the Consumer Product Safety Commission's ruling to ban the use of urea-formaldehyde foam insulation, or UFFI, has generated considerable controversy here in Washington

and has caused individuals concern for their health and concern about the value of their homes. Perhaps one of the few sectors that has maintained a certain harmony is the scientific community, for it has been surprisingly uniform in its disagreement with the CPSC's determination, declaring time and again that there is no scientific evidence at the present that formaldehyde at normal levels poses a health hazard to humans.

I realize that our purpose today is not to debate the correctness of the CPSC's determination. Yet I cannot avoid a growing concern that as Congress continues to address remedies without considering the validity of the Commission's decision, we run the risk of adding credence to a highly contested determination. As a result, we also run the risk of heightening the concerns of homeowners and the instability of the real estate market.

There are approximately 500,000 homes with UFFI and estimates of the cost of removing the insulation run from $3 billion to $20 billion, a staggering amount of money for consumers and the Federal Government alike. It is important to the subcommittee's consideration that it be made aware of the controversy surrounding the CPSC's ruling.

The Consumer Product Safety Commission stands virtually alone in its decision to declare ambient formaldehyde a potential health hazard and carcinogen. In a February 1982 statement, the American Cancer Society declared that "there is no evidence of carcinogenicity in humans." The Federal Drug Administration has declared that "on the basis of the current data of these formaldehyde toxicity tests * * * the agency has concluded that no regulatory action against the use of formaldehyde and the products it regulates is necessary at this time to protect the public health." The EPA has determined that the current evidence on formaldehyde does not recommend classification as a 4(f) substance, or those targeted as "high priority candidates for regulatory action." OSHA has thus far declined to take action to regulate formaldehyde in the workplace.

We should also note that the CPSC, in making its determination, relied on information from studies produced by the International Agency for Research on Cancer. Yet, in a letter dated February 12, 1982 to the CPSC, Dr. John Higginson, former Director of IRAC, and currently the senior executive scientist for the universities associated for research and education in pathology, berated the CPSC for basing its determination of carcinogenicity in humans from the data for animals. The doctor declared: "Few experienced experimental oncologists would make any attempt to extrapolate mathematically the degree of human risk from animals, although such attempts were fashionable * * * in the early seventies." He also stated that "exact estimates as to the number of cases of cancer that might be expected to occur in man based on a single experiment are silly and simply ignore biological realities."

It is also relevant to note that the Superior Court of Massachusetts overturned that State's ban of UFFI. In *Borden, Inc., et al.* v. *Commissioner of Public Health,* Superior Court Judge John Ronan found that "there was no showing that the ambient formaldehyde concentrations in homes with properly installed urea-formaldehyde foam insulation are significantly different from the levels of for-

maldehyde in houses without this product." In the rulings of law, the judge concluded that it was "arbitrary and capricious to classify formaldehyde as an irritant or a toxic or hazardous substance at any level of concentration."

Last May, the Subcommittee on Commerce, Consumer and Monetary Affairs of the Government Operations Committee held hearings on the effects of formaldehyde. Among those testifying was Dr. Michael T. Newhouse, clinical professor of medicine, St. Joseph's Hospital at McMaster University in Canada. Having conducted extensive studies of the available scientific evidence on formaldehyde, Dr. Newhouse has stated that he "can't help but conclude that the banning of UFFI in Canada is turning out to be one of the most costly and ill-conceived blunders to have been perpetrated on a modern and supposedly well-educated society."

Dr. Newhouse described many of the complaints stemming from concerns about UFFI as "media symptoms," finding that if "people live in UFFI homes, they are likely to attribute these symptoms to the most proximate and best publicized cause; namely, formaldehyde coming from UFFI."

In a report Dr. Newhouse presented in Canada last May, he recalled the findings of a New Jersey State Department of Health Study, in which minor irritation symptoms linked with formaldehyde were reported more frequently in the homes without UFFI than in UFFI homes.

Dr. Newhouse's studies, and those of many other eminent scientists, have concluded that levels of formaldehyde of 1 part per million do not pose acute or short-term health risks, and that levels of 0.5 part per million will not create significant irritation in anyone except the highly sensitive. Yet current studies show that most site-constructed homes with UFFI contain levels of 0.05 to 0.1 part per million—far below the safe level. The actions of other regulatory agencies, of the Superior Court of Massachusetts, and the findings of many scientists, of which Dr. Newhouse is but one, indicate that the Consumer Product Safety Commission's ban of urea-formaldehyde foam insulation was premature and lacking in the hard empirical evidence that such actions require. The results have been an unnecessary and inordinate level of emotional stress among owners of UFFI homes, anxiety of property values, the premature loss of the UFFI industry, and the expense of a tremendous amount of time and money to contest the CPSC's ruling.

Dr. Newhouse best summarized the concerns of many who must, having reviewed the evidence, wonder about the—

> * * * soundness of those institutions which should protect us from superstition and illogical and unscientific responses to societal myths. If Government or Government-related organizations such as the Consumer Product Safety Commission do not insist on a high level of scientific proof before acting on such things as the so-called formaldehyde hazard, society's best interest will certainly not be served and the risk of similar disaster in the future will be very high.

That is Dr. Newhouse's quote.

Part of that responsibility is ours as Members of Congress, and I think that by allowing all sides to be heard, this subcommittee has again met its duty.

Mr. Chairman, I have several documents that substantiate some of the statements I have made, and I ask that they be included in the record.

Mr. BEDELL. Without objection, those will be included in the record, Mr. Hiler.

[See appendix D, exhibits 1–7.]

Mr. BEDELL. Our witnesses today include representatives of the Small Business Administration, consumer and homeowner groups, and the formaldehyde industry. The chairman believes they represent a good cross section of opinion on this subject.

In addition, several Members of Congress have indicated an interest in this issue, and groups such as the National Association of Realtors and the National Consumers League have asked for permission to submit written comments. As is our practice in all legislative hearings, if there are no objections, the record will be left open for 2 weeks to receive additional comments for the record.

Are there any objections? Hearing none, it is so ordered.

[See appendixes H, I, and J for additional comments.]

Mr. BEDELL. Our first witness today is Mr. Edwin T. Holloway, Associate Administrator for Finance and Investment of the Small Business Administration. We are glad to have you back with us again, Mr. Holloway, and we look forward to your testimony.

Would you also introduce the people that are with you for the record, please?

TESTIMONY OF EDWIN T. HOLLOWAY, ASSOCIATE ADMINISTRATOR FOR FINANCE AND INVESTMENT, SMALL BUSINESS ADMINISTRATION; ACCOMPANIED BY BERNARD KULIK, DEPUTY ASSOCIATE ADMINISTRATOR FOR DISASTER ASSISTANCE, SBA

Mr. HOLLOWAY. Yes, sir, I will.

Thank you, Mr. Chairman, and members of the subcommittee. I am accompanied today by Bernard Kulik, to my right, who is the Deputy Associate Administrator for Disaster Assistance.

Mr. Chairman, thank you for the opportunity to appear before your subcommittee to discuss our views on two pending bills, H.R. 6389 and H.R. 6391. Both bills, if enacted, would provide Small Business Administration disaster loan assistance to owners of homes and businesses that contain urea-formaldehyde foam insulation.

We are aware that the Consumer Product Safety Commission, in February 1982, voted to ban urea-formaldehyde foam insulation, UFFI, as a hazardous consumer product. The Consumer Product Safety Commission determined that UFFI presented an unreasonable risk of injury to consumers because of acute and chronic illness from the formaldehyde gas released by the foam insulation, and because it is not possible to predict, prior to installation, the amount of formaldehyde that will be released from the product.

I should point out, Mr. Chairman, that our Office of Advocacy has been extensively involved in this issue since December 1980. At a hearing held on March 20, 1981, a representative of the Office of the Chief Counsel for Advocacy stated his opposition to the proposed ban. The Chief Counsel asserted that the proposed ban was not supported by the facts in the rulemaking record. Instead, he

suggested that a mandatory product standard would adequately address the problem. Subsequent to that hearing, the Chief Counsel continued to provide substantial correspondence in support of his position, and the record should also show that this product ban is presently being reviewed by the courts.

In my prepared remarks I shall not be discussing either the relative merits or nonmerits of the actions taken by the CPSC which has resulted in a ban on the use of UFFI, or those sections of the bill that amend the Internal Revenue Code, since those are outside the scope of my responsibility.

H.R. 6389 and H.R. 6391 are designed to assist homeowners in paying for the removal of urea-formaldehyde foam installation from their homes with SBA disaster loans. These bills also seek to aid small businesses involved in the manufacture, distribution, or installation of urea-formaldehyde foam to change their product lines to another insulation or enter into a totally new line of business.

For homeowners, the legislation would require the SBA to provide loans of up to $10,000 through our physical disaster loan program, section 7(b)(1) of the Small Business Act.

Mr. Chairman, we oppose this portion of the legislation for the following reasons: Historically, SBA has made loans to homeowners and others to help them rebuild following a devastating physical disaster. This legislation makes a radical change in the nature of the physical disaster loan program for homeowners. The program would be expanded beyond disasters resulting from fires, floods, hurricanes, tornadoes, and other such destructive physical occurrences to include assistance for individuals who find themselves in a specific unfortunate situation defined by legislation as a "disaster." This legislation would single out one specific element of our economy for assistance under the disaster program, establishing a precedent for future legislated disasters, such as the use of aluminum wiring or asbestos in homes and businesses, or even a Love Canal-type situation.

Congressman Conte, the sponsor of the two bills before you, estimates that 500,000 homes across the country have installed UF foam. If even half of those homeowners were to apply for assistance from SBA, using the maximum loan amount of $10,000 as specified in the legislation, we estimate the initial outlay alone would cost the Government $2.5 billion to fund these home loans. These loans would be made at a subsidized interest rate which currently is 7.75 percent, approximately 6 percentage points less than the actual cost of money to the Government.

Using an estimated 15-year maturity for home loans, this would result in a cost to the Government of approximately $1.8 billion to subsidize the interest rate for homeowners assuming no defaults. This figure represents the difference between the subsidized interest rate of 7⅜ percent and the current cost of money to the Government of approximately 13¾ percent.

Of course, Mr. Chairman, if the demand were less, the cost would be less. But if only one-tenth of the 500,000 homeowners were actually to receive a loan, the Federal subsidy would still be well over $300 million.

Section 2 of the legislation would fund the agency's Federal action/economic injury loan program, section 7(b)(3) of the Small Business Act, for $10 million for fiscal year 1983 and $10 million for fiscal year 1984. This program would be used to make loans to those small businesses unable to obtain credit elsewhere who are engaged in the manufacture, distribution, or installation of UF foam insulation for the purpose of changing their product lines to another insulation or enter into a totally new line of business. At the outset it should be noted that small businesses in the UF foam industry are, like other small businesses, eligible for financial assistance through SBA's 7(a) loan program.

Mr. Chairman, as you are aware, the Budget Reconciliation Act of 1981, Public Law 97-35, which was enacted last August, specifically precluded any funding for section 7(b)(3) before fiscal year 1985. Congressman Conte's bill would supersede Public Law 97-35 by providing funding 2 years earlier than Congress has presently specified. It is difficult to estimate the number of firms engaged in the UF foam industry, or how many loans might be made under this program. But, at the outset, this represents an initial outlay of $20 million.

Further, since these loans would be made to those businesses unable to obtain credit elsewhere, the interest rate to be charged would be 8 percent, resulting in a subsidy of 5.75 percentage points below the current cost of money to the Government. Taking into account an average maturity of 10 years, we estimate that the total subsidized interest rate cost to the Government would be more than $7.7 million. These estimates do not even begin to calculate the administrative costs involved in the processing of this proposed program, nor does it account for other than complete payback to SBA by borrowers.

Mr. Chairman, Congress enacted the 1981 Reconciliation Act in response to significant and continuing economic problems. It has been a cornerstone of the administration's policy to curtail Government spending as part of an overall program to deal with these problems. Last year, Congress decided that curtailment of section 7(b)(3) was necessary, along with cuts in many other worthy programs, to help in bringing spending under control. The need for budgetary restraint is still with us. Moreover, we do not believe it would be equitable to open the door in this case and keep it closed for others. Therefore, we must oppose enactment of section 2.

In summary, Mr. Chairman, we feel we must oppose this legislation on the grounds that, one, it would expand the physical disaster loan program into unnecessary and inappropriate areas by providing preferential treatment for one segment of the economy; two, that it would encompass a cost to the Federal Government of an estimated $1.8 billion or more in subsidized interest to homeowners and businesses; and three, that it would overturn a policy established in the Budget Reconciliation Act of 1981.

Mr. Chairman, I do feel I should add that the Small Business Administration does not wish to be characterized as unfeeling about the plight many of these people find themselves in. We are opposing this bill in questioning this particular form of relief for them.

That concludes my prepared remarks, and if I can, I would be pleased to answer any questions that you may have.

Mr. BEDELL. Mr. Conte?

Mr. CONTE. Thank you, Mr. Chairman.

Mr. Holloway, the impact, the major financial impact from this legislation, if enacted, would come from the residential disaster loan program. It is my understanding that the disaster loan revolving fund is pretty healthy right now, is that correct?

Mr. HOLLOWAY. That is correct, Mr. Conte.

Mr. CONTE. Can you tell me what the program level for residential disaster loans was authorized in 1982?

Mr. HOLLOWAY. Within the disaster loan revolving fund we had authorized $440 million. In addition, we had about $200 million of carryover from last year. So that gave us some $660 million for that fund. With what has been disbursed and with repayments, we now have something in excess of $600 million in that fund.

Mr. CONTE. And how much of that has been actually obligated?

Mr. HOLLOWAY. The $600 million is unobligated.

Mr. CONTE. Could you tell me what your current estimates are for the total actual obligations in 1982?

Mr. HOLLOWAY. Congressman, that is a very difficult question for us to answer, in that we really do not know what disasters will occur between now and the end of the fiscal year. We are less than 3 months to that point, so I would estimate that we would have at least $500 million carryover into the next fiscal year for such fiscal disaster as may occur after October 1.

Mr. CONTE. What was the revolving fund at the beginning of 1982?

Mr. HOLLOWAY. Around $200 million, I believe, Congressman; that was our carryover amount.

Mr. CONTE. So it grew from $200 million to about $600 million today?

Mr. HOLLOWAY. Yes, sir, with a $440 million addition.

Mr. CONTE. Congress didn't appropriate any money for the revolving fund.

Mr. HOLLOWAY. That is correct. It was not necessary to do so.

Mr. CONTE. Now, due to the fact that the Congress has appropriated zero dollars for the revolving fund, and the revolving fund has grown from $200 million in the beginning of 1982 to $600 million now, and with the likelihood of growing even further, right?

Mr. HOLLOWAY. Yes, sir.

Mr. CONTE. Because there are a lot of repayments coming in from prior loans.

Mr. HOLLOWAY. That is correct.

Mr. CONTE. Isn't this situation expected to continue for the next several years?

Mr. HOLLOWAY. We certainly are hopeful that our good experience of the last year or so—that is, few very, very large physical disasters—will continue. However, if for any reason we are hit with a major disaster, the $500 million or $600 million carryover would be there in the new fiscal year to address those needs.

Mr. CONTE. But if we don't have a serious major disaster, we could have a revolving fund maybe by the end of the year of $1 billion?

Mr. HOLLOWAY. I would estimate that that is possible, Congressman.

Mr. CONTE. Mr. Holloway, in your testimony you express concern with the potential costs to the Government, and I share that concern and am doing all I can to stop the spiraling costs of Government. But I am curious, on what basis you believe that as many as half the homeowners would take out a loan. We predict 10,000. Of course, if we use your figure of 250,000, then the figure becomes pretty hefty.

Mr. HOLLOWAY. Congressman, I cannot claim a firm basis for that estimate.

Mr. CONTE. That is the estimate you gave.

Mr. HOLLOWAY. It is an estimate.

Mr. CONTE. Can you give me some basis on how you arrived at that estimate?

Mr. HOLLOWAY. The basis, to the degree there is any very good basis, would be that as long as subsidized money is available, that borrowers who are eligible for that subsidy will claim it.

Mr. CONTE. Well, they have to pay it back.

Mr. HOLLOWAY. They do have to pay it back, but they have to pay it back at a rate of interest that is roughly half the market rate of interest.

Mr. CONTE. Well, we hope that won't continue, either.

Are you aware that over the 3 years of the CPSC investigation a total of 2,000 homeowners actually filed health-related complaints?

Let me read a paragraph from the CRS study put into the record by the Chairman:

> As of 1980, CPSC received from residents of UF insulated houses one complaint of physical effects for every 200 insulations, that is, the physical health effects complaint rate was 0.5 percent. Out of 500,000 homes, that amounts to 2,500 problems.

That doesn't jibe too well with your figures.

Mr. HOLLOWAY. It does not, Congressman. You may be entirely correct, that the demand for this will be less than we have estimated.

Mr. CONTE. Let me put it this way. If we could assure you that we're talking of a maximum of 15,000 or 20,000 disaster loans, or if we even limit the available loans to a total of $300 or $400 million, so it will leave the revolving fund intact, and put a 3-year sunset on the program? Would that help to alleviate some of your concerns?

Mr. HOLLOWAY. Congressman, quite frankly, I believe we would still oppose the legislation on the basis that it is not the appropriate form of relief.

If I were out on the street practicing law and a client walked in who had this problem and had been damaged, I believe I would pursue the party that is liable for that damage. If, in fact, the Government is liable in any way for that damage, then that case should be made in the judicial branch of the Government, and a judgment obtained. I am sure that judgment would be honored and the person would be indemnified, made whole, and not be in debt. We simply take the position that we do not believe a subsidized physical disaster loan is the appropriate form of relief for these unfortunate individuals.

Mr. CONTE. But we're talking about health hazards here. You know as well as I do that in dealing with health hazards it takes at least 4 or 5 years, plus the tremendous amount of costs involved.

Your position is the Federal Government has no responsibility to act in this situation, or that the SBA disaster loan program is not the proper mechanism, as I understand it.

But does it help you at all, that a 1977 HUD Use of Materials Bulletin No. 74 approving the use of UF foam in FNMA-insured projects is still in effect today?

Mr. HOLLOWAY. Congressman, it may very well be that some agency of the Government has liability in this matter.

Mr. CONTE. Also the Department of Energy published interim final rules in September 1980, not fully withdrawn until June of this year, indicating its intent to approve UF foam for use of residential conservation services. It is very disturbing to have the Federal Government telling these people to go ahead, that this is good stuff, and another agency of the Federal Government comes along on the other hand saying, "Hey, you can get cancer from this."

I wish you could talk to some of these homeowners; they're really upset. Times are rough as it is, with high interest rates, let alone somebody coming in and finding out you have UF foam in your house and you try to sell that house, perhaps with 3 or 4 children, you're in real bad shape.

I think maybe I could sum it up by saying you really feel we are establishing a precedent. I think that your testimony is not really on a sound basis in regard to the cost of this. I think the revolving fund could more than take care of it, that we won't have to appropriate any extra money to take care of this legislation by putting a limitation on it, making it a sunset law, even making it a year's sunset law. Your main concern and opposition is that we're setting a precedent and it doesn't belong——

Mr. HOLLOWAY. Yes, sir. We are setting a precedent and, on balance, fiscal restraint has to at times outweigh some very, very worthy Government expenditures.

Mr. CONTE. Thank you, Mr. Chairman.

Mr. BEDELL. Thank you, Mr. Conte.

Mr. Hiler.

Mr. HILER. Mr. Holloway, just as a kind of hypothetical situation, do you think it is appropriate that the Government tries to step in for remedy when the court in Massachusetts has said the ban on this particular substance of urea formaldehyde was capricious in that State; and that OSHA, EPA, the American Cancer Society, have all ruled that this study is not well founded in fact, in proper scientific and epidemiological basis. Do you think it would be right, based on all that conflicting testimony and conflicting facts, that the Government would step forward with a remedy?

Mr. CONTE. Would the gentleman yield to me so I can ask you a question, since you keep mentioning the Massachusetts case?

Mr. HILER. Yes, sir.

Mr. CONTE. Unfortunately, I don't have it here, but counsel tells me that case was thrown out because the court in Massachusetts felt that in the lower decision, the manufacturer had to pay for tearing out the insulation.

Mr. HILER. If the gentleman will yield further, I will just read from the judge's decision. [See appendix E.]

There was no showing that the ambient formaldehyde concentrations in homes with properly-installed urea-formaldehyde foam insulation are significantly different from the levels of formaldehyde in houses without this product.

In the rulings of law, the judge concluded it was "arbitrary and capricious to classify formaldehyde as an irritant or toxic or hazardous substance at any level of concentration."

As I understand this particular piece of legislation, it wouldn't say that someone would have to have a problem. All they would have to do is demonstrate that they had urea foam in their house. It could have been properly installed, or not properly installed. All they would have to do would be to demonstrate that it was in their house and they could qualify for a loan.

I am saying this is the superior court in the gentleman's home State that has said that even classifying formaldehyde as an irritant or a toxic or hazardous substance at any level of concentration is arbitrary and capricious. I become concerned when the superior court in Massachusetts, when OSHA, when EPA, when the American Cancer Society say that the CPSC's findings—if I may extrapolate—are not based on scientific or epidemiological good studies.

I ask you the hypothetical question, do you think it is proper for the Government then to come in with the remedy, as you mentioned, if the urea formaldehyde was installed improperly, as opposed to the folks that have had effects from improper installation being made whole by the producer or by the installer of the formaldehyde?

Mr. HOLLOWAY. As long as the matter is still pending in court—and I understand it is in court for the review, and no doubt all the reports are not in on this yet, and who knows when it will come out—I do not think it is appropriate for the Government, in a loan program, to step in and become an insurer in this case.

[See appendix E for further information regarding the Massachusetts court decision.]

Mr. HILER. I yield back the balance of my time, Mr. Chairman.

Mr. BEDELL. Thank you, Mr. Hiler.

I imagine that you're not the person to ask this, Mr. Holloway, but the question that occurs to me is, I hope somehow we can find out if there is a way of checking the formaldehyde concentrations in the air to find out whether they vary and whether some of these people who are having problems are having the problems because of those particular concentrations.

Does the gentleman from Indiana know——

Mr. HILER. If the Chairman will yield, the level of concentration in a given home will first decline over time, that the amount of what is called off-gassing has its highest concentration at a point just after installation and will filter down over time. It depends a great deal on the air circulation within the particular home, on heat, on the degree of humidity in the home, and of course, I think any time you get to the small concentrations we're talking about, whether at the most extreme of several parts per million, or at the least, .01 part per million, that while you can measure it, there is a

degree of statistical error in there. You can measure it; it can be measured.

Now, to say that any level of formaldehyde is going to be the cause of a particular individual's concern for health difficulties, that is an extrapolation that you can't make. It is very difficult and very subjective at best, like if someone smokes, or if they have an allergy. Some people do have a high degree of sensitivity to urea formaldehyde, just as some people cannot use penicillin as a medicine. So it is very difficult to say that a particular concentration will cause an effect in a human.

Mr. BEDELL. You're educating the Chairman. So I take it that, first of all, it depends partly upon the individual as how much the effect will be upon them individually?

Mr. HILER. Right.

Mr. BEDELL. It also depends partly upon the installation in the home?

Mr. HILER. Correct.

Mr. BEDELL. But I take it, further, that there are ways to measure the concentration of the formaldehyde in the air in the home?

Mr. HILER. Yes.

Mr. BEDELL. Do you know if that is a real expensive thing to do?

Mr. HILER. To determine the level of concentration?

Mr. BEDELL. Yes.

Mr. HILER. I don't know how much a test would cost.

I'll tell you what you could do, Mr. Chairman. The Government Operations Subcommittee on Commerce, Consumer and Monetary Affairs did conduct a test and had an outside testing outfit from Maryland conduct the test. We can certainly check and see what that bill was. I don't know what it would cost.

Mr. BEDELL. Mr. Holloway, the chairman has a little trouble with your testimony. You imply that the interest rate will be 7½ percent on all these loans. Is it not correct that when you apply for a loan of this type that the interest rate is dependent upon whether or not you can get credit elsewhere, and if you can get credit elsewhere it is the cost of money to the Government rather than the 7½-percent interest?

Mr. HOLLOWAY. On interest rates, I would defer to Mr. Kulik, the Deputy Associate Administrator.

Mr. KULIK. You are correct, sir. I believe the bill provides these loans shall be made at the lower rate.

Mr. BEDELL. Regardless of credit elsewhere?

Mr. KULIK. Yes, sir.

Mr. BEDELL. The second thing is, you mentioned setting an example. Is it correct that we have had a similar program for small businesses, where in the past—we don't have it in effect now, but——

Mr. HOLLOWAY. That is correct.

Mr. BEDELL. But we did have a program that said where small businesses were harmed by Government regulations of this type, that they would be able to get help from the Federal Government.

Mr. HOLLOWAY. Yes, sir.

Mr. BEDELL. So we have had that for small businesses, but we have not had it for homeowners.

Mr. HOLLOWAY. Yes, sir, that is correct.

Mr. BEDELL. Did you have any further questions, Mr. Conte?

Mr. CONTE. No. But the point I want to make is the CPSC has had a 3-year study. I don't know where this judge got all his information. They had a 3-year study, where 202 items were admitted into evidence. They're either a bunch of fools down there, or we ought to abolish the agency.

Mr. HILER. If the gentleman will yield, your prior statement might be closer to the facts in this case. [Laughter.]

I don't mean that derogatorily because all Federal agencies make mistakes, as do all Members of Congress. The Federal Drug Administration, EPA, and OSHA, as well as the American Cancer Society, all have said that there is no evidence of carcinogenicity in humans, and on the basis of current data, the formaldehyde toxicity tests, the agency has concluded that no regulatory action against the use of formaldehyde in the products it regulates is necessary at this time. EPA says it is not a high-priority candidate for regulatory action, and that OSHA has declined to take action to regulate formaldehyde in the workplace.

Formaldehyde, as a product, has been around for 100 years. It is considered a building block in the American industrial society. It is used in a tremendously diverse product line. I think the Consumer Product Safety Commission has made a serious error.

Now, further study is definitely needed. I don't think that any time there is this kind of disagreement you should go forward, but I become concerned that the Government is going to begin to provide a remedy when there is such tremendous conflicting testimony and conflicting evidence.

Mr. CONTE. Are they, the Consumer Product Safety Commission, due to come before us?

Mr. ROSENBERG. No, sir, they are not. We have a statement that was received from the CPSC in response to questions from the committee.

[See appendix F, exhibit 2.]

Mr. CONTE. Well, I think we ought to have them up here, so Mr. Hiler can——

Mr. BEDELL. Were they invited or not invited?

Mr. HILER. We can submit the record from the Consumer and Monetary Affairs Subcommittee of Government Ops, where we had 2 days of hearings on this in May, where we went through quite a bit of this, where they were up here as well as a variety of other people.

Mr. BEDELL. Were you at those hearings?

Mr. HILER. I sure was, Mr. Chairman.

Mr. ROSENBERG. The Consumer Product Safety Commission was not invited as one of the witness groups. However, Congressman Rosenthal, who chairs the other committee, has indicated an interest in submitting material to the record of this hearing. His staff advises that he has a conflicting appointment so he couldn't be here today. But when the hearing was originally scheduled, the thought was that most of the material from the other hearing would be available for the record here.

Mr. BEDELL. The suggestion of the chairman is that we proceed with our hearing and see at the conclusion if we feel we should have additional hearings and have the Consumer Product Safety

Commission before us. I would think that could certainly be arranged.

We appreciate very much your testimony, Mr. Holloway.

Mr. HOLLOWAY. Thank you, Mr. Chairman.

Mr. BEDELL. Our next witness is Anne Averyt, a product safety specialist for the Consumer Federation of America. We appreciate your being here to testify, Mrs. Averyt.

TESTIMONY OF ANNE C. AVERYT, PRODUCT SAFETY SPECIALIST, CONSUMER FEDERATION OF AMERICA

Mrs. AVERYT. Thank you very much, Mr. Chairman.

You have copies of my testimony so I am not going to read all of it, but I would like to summarize it and perhaps address a few of the points that have been brought up this morning.

The Consumer Federation of America is the Nation's largest consumer advocacy organization and we support H.R. 6391 and two similar bills that have been introduced by Representative Conte. The Consumer Product Safety Commission ban that was voted on in February 1982 represented 6 years of study, and volumes of data. We feel that the conclusion the Commission reached that there was an unreasonable risk of injury posed by UFFI was the right decision.

Approximately 500,000 American homes are now insulated with UFFI. These people need some assistance in removing this harmful substance from their homes. There are both acute and chronic effects associated with formaldehyde poisoning from UFFI. The short-term effects cover a wide range of symptoms, from skin rashes, to nose bleeds, to headaches, to abdominal pains, and vomiting and many asthma-like symptoms. These symptoms—apart from the additional risk of cancer associated with UFFI—have caused a great deal of physical and mental suffering for UFFI victims. They have often run up hundreds of dollars in medical bills trying to get relief from what they have been told is winter flu or what they have been told is asthma and what eventually is shown to be poisoning from UFFI. That alone is a significant basis for concern over formaldehyde.

In addition, since 1976, researchers have been discovering links between formaldehyde and cancer in laboratory animals. The CIIT study, which was an industry-sponsored study, was the first to find positive test results indicating formaldehyde exposure caused cancer in laboratory rats. That study was reviewed by an independent Government panel of 16 scientists from eight Federal agencies. The chairman of that committee of Government scientists testified at the May—Rosenthal—hearings, and he said that formaldehyde induced both gene mutations and chromosomal aberrations in a variety of test systems, that inhalation of formaldehyde caused cancer in the nose of rats, and that the concentrations of formaldehyde from inhaled air which caused nasal cancer in the Fisher 344 rats are within the same order of magnitude as those to which humans may be exposed.

Other experimental and human studies on toxic effects are as yet inadequate, he says, but the panel concluded that it is prudent to regard formaldehyde as posing a carcinogenic risk to humans. He

concludes formaldehyde gas is a carcinogen and believes it is prudent to assume that doses that are carcinogenic for rats by inhalation are also carcinogenic for humans until human data to the contrary are obtained.

In addition, Dr. Arthur Upton, who is the former director of the National Cancer Institute, described formaldehyde as decisively a cancer-causing agent in animals and a likely carcinogen in humans. He warned it would be a mistake to ignore the evidence for carcinogenicity in formaldehyde. It is interesting, if we had a Delaney amendment on products as well as on foods, there would be no debate here about whether there is a problem with the test animal results.

It is also interesting to note that the World Health Organization has recently put out a draft memo from its environmental division, recommending a .05 room level for formaldehyde. In addition, The Netherlands, Australia, Norway, and Germany have all set up ambient room levels in their countries of .1. As the National Academy of Science says, there is no known safe level of exposure to formaldehyde, and that people, according to their studies, experience adverse reactions to formaldehyde even at levels of .05 ppm and below. They also add that up to 20 percent of the population of the United States can be susceptible to adverse reactions to low levels of formaldehyde, that is, below .1 percent. So we are not just talking about an allergic reaction that a few people have. We are talking about a significant health problem, and this is just in the short-term effects of reactions that people have to formaldehyde.

It is true that formaldehyde is used in a wide variety of consumer products and that it has been used for years. Many of the problems with UFFI and with pressed-wood products originate to a large extent from the early seventies, when people started to become energy conscious, and to seal up their homes and cutoff the air circulation from the outside. As the leaks were sealed up, what in effect happened, was that homes were turned into envelopes of poison. This is one of the large problems with UFFI, that it is trapped inside the home and is not able to dissipate.

The other problem is that the type of population that is in the home and spends a great deal of time in the home, is a population that is very susceptible to these short-term effects. The asthmatic, the children, the elderly, people with respiratory problems, people with cardiovascular problems—all spend a great deal of time in the home and are subject to large doses of the poison over time.

Another thing that concerns me is that the costs of removing UFFI from people's homes is estimated to be anywhere from $6,000 to over $20,000. What you have to do, in effect, is rip down the walls of your house, manually scrape out the insulation that has hardened to a cement in your walls, wash that wall cavity with a sealant, and then put new insulation in, and put new walls up.

Now, if I don't have a problem with UFFI, I certainly am not going to go to all that trouble and all that expense to remove it if it is not a real health problem for me, and if I don't consider it a significant health hazard. I think the chances of abuse because of low-interest loans is just nonexistent, because people aren't going to go to the trouble or the expense. You're talking about a lot of money here. We think the Conte bill will not remove the burden of ex-

pense that these people will have to endure, but it will certainly help them and ease that burden. We think it is absolutely necessary.

We submitted comments to the Rosenthal hearings in May, saying that what we support is a bill that would have made industry liable for the costs of removing that insulation and putting new insulation in. We based it vaguely on the Massachusetts regulatory model. Such a bill, however, would have no chance of passage in Congress today, and I think that Representative Conte's bill is far more realistic.

What concerns us, though, is how the industry has responded to this problem from the beginning. They have attacked the Consumer Product Safety Commission and they have tried to sabotage its investigation. They said they have been victimized by the CPSC and their industry ruined, and they to this day do not admit there is any health problem associated with UFFI. Consumers are the losers in this situation. When industry is irresponsible, consumers suffer.

The CPSC ban will guarantee that UFFI is no longer installed in American homes. Again, this is a product for which there are substitutes that are quite adequate and there is no need to put UFFI in with this kind of risk.

We feel that with interest rates in this economy at 16 to 18 percent there is an impossible burden upon people who have to borrow $20,000 or more to repair this health hazard in their home, and we feel that Representative Conte's bill would significantly ease that burden.

The Canadian Government finally has appropriated $110 million this year to help remove UFFI from Canadian homes. They are providing grants of up to $5,000 per home—grants, not loans—because they consider UFFI a significant health risk. The American budget, however, is over $700 billion, whereas the Canadian budget is only a little over $100 billion. So, by contrast, they are investing a sizable amount of their Federal budget into this problem, because they feel it is a significant health threat.

In just a few months after the announcement was made of these grants, 33,000 Canadians requested applications to determine their eligibility for the program. Likewise, in the early weeks following the ban of UFFI, American homeowners were calling the CPSC at the rate of 700 calls a day to find out about the insulation in their homes. The callers were both angry and afraid. The most frequent question they asked according to the CPSC staff was, "What can I do now?" The CPSC had no answer. They had no help to offer these people in removing the poison from their homes. But if the Conte bill is passed, the people will have some help.

The last thing I want to say is that in terms of the Federal disaster loan program, I vacationed in a beach resort in Alabama this past summer which had been hit by Hurricane Frederick 2 years ago, and wiped out most of the homes. This town has gotten incredible amounts of money for both low interest flood insurance and also millions of dollars in money to rebuild. It is built right on the beach. When the rainstorms are high, those houses get water in them. In the case of a flood, there is no possibility that they will stand. Those people know the risks that they are taking when they

build those houses. The Federal Government is giving them money and is rebuilding for them, and yet the people who put the UFFI in their homes did not know that there was a dangerous product.

There is no Federal Government regulation to require any safety testing for a product such as UFFI, although there is for drugs. UFFI homeowners are hard-working Americans who saved to buy a home that they now cannot resell; who were conscientious in weatherizing their homes to help ease the national energy crisis, and who now have become victims—suffering ill health, often incurring large medical bills—of a product that was never tested for health hazards before it was sold to them.

We urge Congress to consider the merits of this legislation and to pass it with all possible speed.

[Mrs. Averyt's prepared statement follows:]

PREPARED STATEMENT OF ANNE C. AVERYT, PRODUCT SAFETY SPECIALIST, CONSUMER FEDERATION OF AMERICA

The Consumer Federation of America, the Nation's largest consumer advocacy organization, supports H.R. 6391 (and two similar bills, H.R. 6389 and H.R. 6390) introduced by Representative Silvio O. Conte to provide relief to homeowners who have urea-formaldehyde foam insulation in their homes.

The U.S. Consumer Product Safety Commission banned the manufacture and sale of UFFI in February 1982 because of the unreasonable risk of injury posed by the product due to its acute and chronic toxicity. UFFI was installed in approximately 500,000 American homes before it was banned. For many of those homeowners, life became a chemical nightmare after the foam insulation was installed.

Al Palmero is here today to tell you how UFFI transformed his family's life. The Wagner family of Bayville, New Jersey had a similar experience. After UFFI was installed in their home, they all experienced severe formaldehyde poisoning and eventually had to leave their home, never to return. The short-term effects of exposure to formaldehyde include nosebleeds, headaches, sneezing, coughing, eye, nose and throat irritation, skin rash, abdominal pains, chest pains, shortness of breath, vomiting and many asthma-like symptoms. Often victims spend thousands of dollars seeking medical treatment that has little effect. The medical community remains alarmingly uninformed about formaldehyde poisoning. In addition, victims can become sensitized to formaldehyde in other products, causing them to experience an allergic reaction whenever they come in contact with the hundreds of consumer products that contain the chemical. Today, Mr. Wagner still becomes dizzy when he comes in contact with certain shampoos, cleaning products, plastics, and natural gas. His daughter develops headaches and breathing problems around paint, felt-tip pens, and perfume.

The long-range effects of exposure to formaldehyde gas is still being explored. Since 1976 researchers have been discovering links between formaldehyde and cancer and laboratory animals. The Chemicals Industry Institute for Toxicology (CIIT) was the first to find positive test results indicating that formaldehyde exposure caused cancer in laboratory rats. An independent Government panel of 16 senior scientists reviewed the CIIT findings and concluded: "formaldehyde should be presumed to pose a carcinogenic risk to humans." Dr. Arthur C. Upton, former Director of the National Cancer Institute, reiterated the warning, describing formaldehyde as "decisively" a cancer-causing agent in animals, and a "likely" carcinogen in humans. He warned: "it would be a mistake to ignore the evidence for carcinogenicity in formaldehyde."

The Consumer Product Safety Commission estimates that of the approximately 1.75 million people living in homes insulated with urea-formaldehyde foam, 89 people could develop cancer as a result of their exposure to the formaldehyde fumes. The National Academy of Science estimates, however, that up to 20 per cent of the population of the United States may be susceptible to the short-term adverse effects of low-level formaldehyde exposure.

The CPSC ban of UFFI protects Americans who have never installed the insulation in their homes. It provides no relief from the present suffering, both physical and financial, experienced by the nearly 2 million Americans who live in homes insulated with urea-formaldehyde.

The problems experienced by these Americans is significant, including: adverse health reactions, the possibility of cancer, mounting doctor's bills for treatment that is useless in relieving their suffering, and a drastically reduced resale value for their home. Removing the insulation is a difficult and very expensive undertaking. The walls of the home must be removed. The insulation, which has hardened in the walls, must be scraped out and the wall cavities sprayed with a sealant before new insulation can be installed and the walls rebuilt. Cost estimates range from $6,000 to more than $20,000.

The Conte bill, which we support here today, would provide some much-needed economic relief for the affected homeowners. The expense they incur will still be enormous but the combination of low-interest loans, medical tax deductions and energy conservation tax credits will help ease the burden.

The Consumer Product Safety Commission did not offer any assistance for homeowners with UFFI already in their homes when it banned the insulation. Nor did it recommend any remedial action to Congress. In comments filed to the House Subcommittee on Commerce, Consumer and Monetary Affairs during hearings on formaldehyde in May, the Consumer Federation of America proposed legislation to establish legal liability for removing urea-formaldehyde foam insulation from American homes. We advocated a plan based upon the Massachusetts regulatory model which would have required that industry shoulder the costs of removing UFFI and installing substitute insulation in homes where occupants experienced adverse health reactions. This legal liability would have extended for a fixed period of time to protect subsequent buyers of UFFI homes, thereby relieving present owners of financial loss in the sale of their home. Because most UFFI installers and many UF foam manufacturers are out of business we proposed that the legal responsibility for removing the foam should extend to manufacturers of the chemical itself.

In the light of legislation now pending in Congress to ease product liability laws and the attitude prevalent in Washington that it is business and not consumers who need Government protection, such a plan is unlikely to be adopted. We therefore support the Conte bill as a means of providing some assistance to UFFI homeowners.

The Government has a responsibility to protect consumers. The Congress has given the Consumer Product Safety Commission a direct mandate to provide protection from hazardous products. Unlike drugs which must receive a safety approval before they are marketed, consumer products are not subject to any required Government testing before they go on the market. The burden of proof that a product represents a safety hazard rests with the CPSC. The industry, in the case of UFFI, has categorically and consistently denied that their product is a health threat. Instead, they accused the Commission of ruining their industry, and attempted to discredit the agency's investigation.

It is consumers who are the losers in such a situation. When industry is irresponsible, consumers suffer. Thanks to the CPSC ban, UFFI will no longer be installed in American homes. A dangerous product has been removed from the market. But what of the 500,000 homes already insulated with the poisonous foam? Unlike a hair dryer containing asbestos that they can return to the store for an exchange or replace for a few dollars, UFFI is a cement in the walls of their homes, poisoning their families. To remove it could cost more than $20,000. In the best of economies, that represents an enormous investment. In this economy, with interest rates at 16 or 18 per cent, it represents an impossible burden. Representative Conte's Bill will not remove that burden, but it will significantly ease it. The legislation will not create an undue hardship on the Federal budget, but it will relieve some of the hardship imposed on UFFI homeowners who want to remove the unsafe insulation.

The Canadian Government, which banned urea-formaldehyde insulation a year ago, is investing $87.9 million to help remove UFFI from Canadian homes. It is providing grants of up to $5000 per home to cover remedial work. Only 80,000 Canadian homes were insulated with UFFI as compared to 500,000 American homes, but the Canadian Government considers the health risks posed by the product to be significant enough to warrant this Federal spending. In the first 4 months following the announcement of the grants, close to half of the homeowners in Canada who had UFFI in their walls inquired about the Government program to remove it. 33,000 Canadians requested applications to determine their eligibility for the program.

Likewise, in the early weeks following the ban of UFFI in the United States, homeowners were calling the CPSC hotline at a rate of 700 calls a day to find out about the dangerous substance in their homes. According to the CPSC staff, the callers were both afraid and angry. The most frequent question they asked was "What can I do now?" The CPSC had no answer. They had no help to offer these people in removing the poison from their homes. But if the Conte bill is passed these people

will have some help. They will still have an enormous financial burden to bear, but they will have some assistance. They will also know that the Government cares. That it is not just willing to give tax breaks to corporations and wealthy individuals, but willing to extend assistance to hard-working Americans who have saved to buy a home that they can now not resell, who have been conscientious in weatherizing their homes to help ease the national energy crisis, and who have been victims—suffering ill health, often incurring huge medical bills—of a product that was never tested for health hazards before it was sold to them.

We urge Congress to consider the merits of this legislation, and to pass it with all possible speed.

Mr. BEDELL. Thank you very much.

Mr. Conte?

Mr. CONTE. At the outset I want to congratulate you for a very, very fine presentation. You certainly have done your homework and you have your facts well in hand.

How long has your organization been involved with the UFFI issue?

Mrs. AVERYT. Well, we have been involved with UFFI for about 1½ years now, and the whole formaldehyde question. We are interested in UFFI, but we are also very interested in formaldehyde in other products as well.

Mr. CONTE. Does your organization have a position on whether there is a safe level of formaldehyde exposure?

Mrs. AVERYT. The National Academy of Science said you can't really say what is a safe level. We feel, however, that based on the preponderance of scientific evidence, that the ambient level, which is the room level, of formaldehyde should be kept below 0.1 part per million. That is pretty well the accepted limit. But with formaldehyde, you have it in so many different products, there is a cumulative effect. It's in your draperies, it's in your rugs and so on and so forth. So when you are talking about the off-gassing or the level of formaldehyde given off by one thing like insulation, you have to have it below 0.1 part per million.

Mr. CONTE. I don't understand. You say the room level should be 0.1, or the amount given off by the foam?

Mrs. AVERYT. No, the room level, the total ambient room level should be 0.1. After 0.1 you start finding significant problems with reactions to the product.

Mr. CONTE. A lot of homes never reach that level. That's a pretty low level.

Mrs. AVERYT. That is low level, but that is the level, as I said, that the Netherlands, Australia, and Norway, all have as national standards. We feel that that is what we should strive for as a level.

The problem is that in many UFFI homes, if you look at the data—and I can supply it—you often have off-gassing that exceeds 3 parts per million, which is OSHA's time-weighted standard for a 40-hour workweek for a healthy individual. The problem with UFFI was that there was no quality control when it was mixed at the site and poured into the walls. Depending upon the heat and humidity factors that day and how it was mixed, there were real problems in how much off-gassing resulted. You couldn't test it until it got in, and once it got in, it was too late. That was one of the main reasons that CPSC banned this product, because there was no ability to monitor.

Mr. CONTE. In Massachusetts the legislature passed legislation which would require the foam insulation industry to pay for the replacement costs of UFFI foam. That legislation was overturned by the lower State court on constitutional grounds. Where does that case stand now?

Mrs. AVERYT. First of all, let me make clear that case was not thrown out on its merits. It was thrown out on a technicality: That the industry did not have enough time to respond to the proposal. There was no question about the legislation itself, but there was a technicality. That is now being appealed.

There are two separate parts—the reimbursement concept and then also the ban. The overturn of the ban is now being appealed, and the final word is not in yet on that decision. You can find scientists and doctors and people to support your point of view or any point of view. The judge quotes doctors supporting his point of view. It is interesting, that first of all the judge said that when insulation is properly installed, there is no problem with off-gassing. Well, the whole problem was that all too often it wasn't properly installed. So his whole premise was incorrect, because when we're talking about a problem, often it was when the UFFI was improperly installed.

The other thing is that the judge said that health problems at any level of concentration are arbitrary and capricious. Well, the body of international scientific evidence does not agree. The National Academy of Science, the Government's own regulatory branch, the Government's own interagency panels, the World Health Organization—the evidence just is contrary to what he is saying, and that is being appealed.

Mr. CONTE. I understand the largest manufacturer of foam, Rapco, has filed for bankruptcy. Many small businesses have gone under as well.

Is it still possible to find members of the industry who would be able to bear the financial burden of this?

Mrs. AVERYT. Many companies have indeed filed for bankruptcy. What we have wanted to do is push the liability up the ladder. In other words, if the installer was out of business, and the UF foam manufacturer was out of business, then the manufacturer of the chemical itself would be liable.

One reason we wanted to do this legislatively was because there is legislation now pending in Congress to weaken the product liability laws and it is going to make it even harder for people to go through the law courts and get compensation. It is also a very long and expensive process, and it doesn't really solve the problem of that insulation in people's homes right now.

Mr. CONTE. Thank you, Mr. Chairman.

Mr. BEDELL. Mr. Hiler.

Mr. HILER. You mentioned the World Health Organization's reaction. Isn't the International Agency for Research on Cancer funded by the WHO?

Mrs. AVERYT. That's right, it is, and they said that while the evidence for carcinogenicity in animals from formaldehyde was well established, they were not willing to make the link with humans. But a different body of the World Health Organization is now reviewing that data and they have come out with a draft recommend-

ing a 0.05 ppm indoor level. The agency is in The Hague, I believe. We can provide you with a copy of their draft.

Mr. HILER. If I could go on with my question, why do you suppose that Dr. Higginson, who is a former director and currently the senior executive scientist for the Universities Associated for Research and Education in Pathology, just completely blasts the CPSC for their decision? Here is a person who headed up the agency. He has a very strong reaction to CPSC. All you have to do is talk to him and he gets heated.

Mrs. AVERYT. Well, first of all, in talking to scientists on any question of interpretation, you get very, very different answers. This is a question that ultimately comes down to a question of interpretation and can you make the link from the animal data to the human studies. He obviously feels that in his professional wisdom that you can't do that. Others very, very strongly disagree with him.

Mr. HILER. So I guess, if we had to draw a bottom line here, what we would say is it is an extremely controversial subject of which there is—well, you might disagree with this—but I would say there is no clear-cut consensus on one side or the other and that there is a great deal of controversy. It is true that the CIIT study which you referred to did find carcinogenicity in rats where it was scientifically significant in 15 parts per million, but did not find it in mice, which I think is interesting. So we have a difference in specimens that were used.

Mrs. AVERYT. There is a New York study after that that confirmed that. There was an NYU study that confirmed that finding.

Mr. HILER. I'm sure it would confirm the finding in 15 parts per million, and in some cases it is 6 parts per million.

Mrs. AVERYT. Two parts per million, too.

Mr. HILER. In rats. But that in the general populace we don't see any difference in the folks who have been exposed to urea formaldehyde in the type of cancer that was developed here, which was the nasal cancer. We can go on debating whether the CPSC was correct or not correct. You talked about taking a leap from whether you are willing to say that something that causes nasal cancer is 15 parts per million in a rat as opposed to a mouse, and can do it in a human. You say that is a leap. It is also a leap when we in Government decide that, in spite of the fact there is a tremendous amount of controversy, in spite of the fact there is controversy within our own Government, in spite of the fact that there is controversy over the world, that we would determine that we are going to open ourselves up to a relatively unlimited potential for remedy, and while maybe it would only be 10,000 homes, it could be 500,000 homes. So I guess that is the potential limit, when there is no clear consensus that the problem as a scientific problem exists. So I guess there is a big leap that has to be taken there as well. I think that is what many of our concerns are, on both sides of the aisle.

Mrs. AVERYT. What I think you will hear from the next witness, Al Palmero, is the story of a person who suffered from the effects of UFFI. He will tell you there is no leap to be made, that he knows what he has experienced and what his problems have been, and that when he has been removed from the source of the poison

and gotten out of that UFFI home, it gets better. For some people it doesn't get better. Once they are exposed they become sensitized and they become allergic to formaldehyde in felt-tip pens. This is a real health problem for not an insignificant number of people, and those people need some assistance. The amount of $20,000 is still a lot of money, even at 7 percent interest. This is not a Government handout. These people really have to want to go to the trouble and the expense of doing this, so the health hazard has to be real for them to undertake this. It has been real for a lot of people.

Mr. HILER. I understand.

I yield back, Mr. Chairman.

Mr. BEDELL. Thank you, Mr. Hiler.

Mrs. Averyt, you mentioned the Canadian experience, where they apparently have a $5,000 grant. Do you know how many people have taken advantage of that grant and how much they have changed the situation in Canada, as to how many of the homes have been rehabilitated?

Mrs. AVERYT. As I said, this was only announced and approved in the spring of this year. There was an initial response of 30,000 people out of the 80,000 who had UFFI in their homes that filed for applications to get the $5,000 grant. Now, what has to be done in Canada is to document an adverse health impact. There has to be a level of above 0.1 in the home. So now they are in the second step of the process for many of these applicants, which is testing these homes. The individual has to bear a part of the cost of testing their home. So right now it is at such an early stage that I don't think any grants have been given out at all. But there has been a tremendous initial response to this program.

Mr. BEDELL. So it would probably be possible, would it not, to get from the Canadian Government the results of the tests they have made so far in regard to two items which at least would be of interest to the chairman: One, what it costs to check to find out whether the ambient air concentration exceeds the 0.1 percent. Second, what percent of the homes they have tested they found exceeded that limit. I would think that would be terribly important for us in considering this legislation.

Mrs. AVERYT. We can do that. We don't even have to go to Canada. It has been done extensively in Minnesota, and I can give you the data. I didn't think we were coming to discuss the health risks of formaldehyde because I thought we had accepted that, so I didn't bring all my data with me. But there have been extensive studies done by the public health departments in those States.

Mr. BEDELL. Can you ball park what it costs to check the air concentration?

Mrs. AVERYT. It depends on how sophisticated your test is. In other words, you can test to, say, one part per million or point five parts per million and it is not as expensive a test as if you're testing for 0.1 parts per million. So it depends on how sophisticated——

Mr. BEDELL. But testing for 0.1, can you tell us?

Mrs. AVERYT. I don't know. I have seen the figures on the results. I haven't seen the figures on the cost of that testing.

Mr. BEDELL. All right. Can you tell us what the results are, roughly what percent. It makes quite a difference as to whether it

is 10 percent or 90 percent of the homes that exceed the 0.1 part per million.

Mrs. AVERYT. May I submit that to the committee, because I just don't have that right with me. But there is a significant range, from very, very low levels of concentrations to very high levels of concentrations, as I said, sometimes exceeding the 3 parts per million that OSHA has set for an occupational standard, and at times reaching 10 ppm.

Mr. BEDELL. I yield to Mr. Conte.

Mr. CONTE. Let's go back to the Canadian question that you asked.

The Canadian Mortgage and Housing Commission in Toronto, tested 2,400 homes in the autumn for formaldehyde levels, with 2,000 homes having UFFI and 400 homes lacking UFFI. Of the 400 without UFFI, 11, around 3 percent, had formaldehyde levels exceeding 0.1. Of the 2,000 with UFFI, 198, 9.9 percent, had levels exceeding the 0.1 standard. From this data, the Canadian Mortgage and Housing Commission estimates that about 8,000 homes in Canada—that's about 10 percent of the housing stock—will require some remedial work.

Mr. BEDELL. Great. But if that is correct, then would it not be true that rather than 500,000 homes, we probably are talking about more like 50,000 homes in the United States that must exceed that limitation? Can we draw that conclusion or not?

Mrs. AVERYT. I think that may be an accurate extrapolation. I think you are not talking about 500,000 homes that are going to remove this foam, and I don't think you're talking about 500,000 homes where there is a health problem. But I think you are talking about a significant number and 50,000 sounds like a good number.

Mr. BEDELL. So the reality is, rather than talking about some $5 billion, we are talking about more like $500 million at the maximum?

Mrs. AVERYT. Yes.

Mr. BEDELL. Is that realistic?

Mrs. AVERYT. Yes.

Mr. BEDELL. I think it's pretty important to know whether we're talking about $5 billion or $500 million.

Mr. CONTE. The other point that Anne makes, which I think is very cogent and very important, is that, you know, who is going to go out and try and get a loan to rip down their walls? If any of you have ever done that—and I have done plenty as I do all my own homework—it is the messiest, filthiest mess in the world to rip down walls and get all that stuff out just to get a loan.

The other thing I wanted to mention, the SBA guy said we're establishing a precedent here. Well, we are not really establishing a precedent. I got to thinking of my other Committee on Appropriations, when they passed the black lung bill. I voted against it, but it is law, and anyone who worked in a coal mine is presumed to have black lung disease and the Government has paid them not loans but actual grants.

Mrs. AVERYT. There is just one other point I would like to address, if I may, which is in terms of the other regulatory agencies and their actions on formaldehyde. First of all, the only product that FDA regulates that has formaldehyde in it is cosmetics. There

is a trace amount—very, very small levels of formaldehyde in cosmetics so that is why FDA is not moving on the regulatory front there.

It is interesting to note that the cosmetic industry itself, however, has a safety panel that is now undertaking an evaluation of formaldehyde in cosmetics to see if they consider it safe at all as a cosmetic ingredient. So they are addressing that question, and also the cosmetic industry is currently looking for alternatives to formaldehyde in cosmetics.

In terms of the EPA, there were hearings held just shortly after the May hearings in the Rosenthal Commerce Subcommittee on EPA's dealings with formaldehyde. At best, I think you can say the circumstances surrounding EPA's decision not to get involved in formaldehyde were dubious. It was a decision made by one person unilaterally and there were a lot of other people in EPA who felt this was not the right decision.

One thing that is critically important that people don't look at is that the Consumer Product Safety Commission, at its reauthorization last year, was able to retain independence. It is not inside an agency. It functions without a lot of political ties. It is not told how to vote on things or there is not a lot of political pressure. So the CPSC decision was an independent decision, where there is some question in both OSHA and EPA as to some political pressure put on those agencies to take the stand they took against regulating formaldeyhde.

Mr. BEDELL. Do you know, or has any check been made, as to any way to filter out the formaldehyde in the air, or any other way to solve this problem, rather than having to tear down all the walls? I agree. I don't think people are going to be rushing out to tear down all the walls of their house.

Mrs. AVERYT. Filtration systems are one way of reducing the levels. They haven't been found totally adequate. The other thing is, you are defeating your purpose in terms of insulating your home when you are using a filtration system that brings in outside air.

You might be interested to know that right after the CPSC vote, those little ecologizers started advertising on television saying they get formaldehyde out of the air—they probably do get a very small amount out. But unless you are filtering in outside air and getting real air circulations, it is not going to help much.

Industry is working on filtration systems now.

Mr. BEDELL. Do you know that for a fact? You say somebody is advertising that they have a way of filtering the formaldehyde out. Do you know for a fact that those are not very effective?

Mrs. AVERYT. I have one at home. They are just little units and they do help in cleaning out the air somewhat. When you're talking about urea-formaldehyde foam insulation or other formaldehyde outgassing from pressed-wood products, what they have experimented with—and the formaldehyde industry people can tell you this better—what they have experimented with are much larger air filtration systems for the entire house. This is what is needed. That does help to some extent, although if you have a high level of formaldehyde, it won't solve your problem.

Mr. BEDELL. I take it there is some chance that—if we have got 90 percent of the homes that meet that requirement right now, if I

understand it correctly, that 90 percent of the homes right now are below the 0.1 part per million of formaldehyde in Canada?

Mrs. AVERYT. OK. That was read in your statement from Canada.

Mr. BEDELL. If that is the case, I have to assume that of the remaining 10 percent there must be at least part of those homes that only marginally exceed the 0.1 part per million. We are just pulling figures out of the air, but any of those that you could solve by filtering the air or something like that would seem to me to make a heck of a lot more sense than tearing out the walls and pulling all the formaldehyde out of there.

Mrs. AVERYT. I agree with you. I would like you, if you would, to pose that question to Al Palmero, because people who have had a really bad problem have tried those things. I would be interested to hear what his experience is on that.

Mr. BEDELL. Any other questions?

I really appreciate your testimony. Whether we agree or what, I have to tell you that you're an extremely effective person in testifying because it appears to me that you're trying to be so objective and honest and straightforward and not simply trying to say what would help you rather than anything else. Thank you.

Mrs. AVERYT. Thank you very much.

Mr. BEDELL. Our next witness is Albert Palmero and Maureen Leyda, Save Us From Formaldehyde Environmental Repercussions [SUFFER]. That's a pretty smart acronym that you folks have developed.

You may proceed, Mr. Palmero.

TESTIMONY OF ALBERT PALMERO, CONNECTICUT COORDINATOR, SAVE US FROM FORMALDEHYDE ENVIRONMENTAL REPERCUSSIONS [SUFFER], ACCOMPANIED BY MAUREEN LEYDA, CONSUMER, COLCHESTER, CONN.

Mr. PALMERO. My name is Albert Palmero. As you said, I am a member of SUFFER. I want to make it clear that we are only concerned with the victims of UFFI. We have no desire to see installers, who partly were to blame for the problem, benefit from these bills.

The following story relates my family's personal experience with urea formaldehyde foam insulation which I would like included in your investigation.

My wife, Carol, my son, David, my daughter, Dianne and myself were all made sick by UFFI installed in our house. Since our nightmare spans a period of over 5 years, I will only cover the highlights here.

Our home of 14 years was insulated with UFFI on December 14, 1976. It was a cold day with a temperature of approximately 17 degrees. Three days later, I brought my wife to the doctor with what we thought was the flu. The whole family had typical formaldehyde poisoning symptoms, but we did not realize it at the time. The house was tested and found to have 10 to 15 parts per million, 10 to 15 parts per million, of formaldehyde. This is 3 months after installation. Our cat developed severe breathing difficulties, aged very rapidly, and died several months later in August. Since the time

we were forced out of our home, we have lived in a total of approximately 10 places in an effort to find clean air. These included four houses and several cottages and motels, spanning five towns.

I would like to give you some idea of our present problems that we and others like us have to cope with every day. Our electric stove is in the basement to minimize fumes. To clean it, I have to disconnect it and carry it outside, reconnect it—and this is an automatic, self-cleaning oven—put it through the clean cycle and let it air out and then bring it back into the house.

We have a two-car garage in our basement and we can't use it because the fumes make everyone sick. Also, when we are out in the car in the winter time, we can't even use the heat. My daughter will say, "Daddy, turn off the heat; it gives me a stomach ache," even if it's zero degrees outside.

We have little or no furniture in our bedroom except a bed in order to minimize the pollution levels. It is difficult to find furnishings that do not contain formaldehyde.

My wife was studying for her Ph. D. and had to read all printed materials through glass or hard plastic to protect her from the fumes of the ink and paper. She had extreme breathing difficulties during the polluted summer of 1977. The doctor treating her at the time said later he had doubts about her survival that summer. But she seemed to recover, though, and then began to have problems again in the summer of 1979. By November of 1979 her lungs had filled with two gallons of fluid. She was rushed to the hospital and put in intensive care for 3 days. The doctor who admitted her said she may not pull through.

After 6 weeks in the hospital she was better and released. However, her liver never fully recovered from this. In March of 1982 again she had fluid in her lungs. We brought her to the hospital and the fluid cleared up in 2 days and she was released. However, Dr. Hom, who was in charge of her at the hospital, said her liver had been severely damaged and she had 2 years to live at the most.

I had to bring her to the hospital again on April 28, 1982, with fluid in the lungs, and she died the next day. Dr. Hom stated that the cause of death was cirrhosis of the liver and that the probable cause of the liver damage was formaldehyde. I have a statement included from Dr. Hom on that.

[The material referred to above follows:]

KENRICK E. HOM, M.D.
30 PECK ROAD
TORRINGTON, CONNECTICUT 06790
TELEPHONE (203) 489-5148

May 14, 1982

Mr. Andrew Savitz
Office of Congressman Rosenthal
Washington, D.C.

RE: CAROL PALMERO

Dear Sirs:

I am writing this letter at the request of Mr. Albert Palmero, the husband of the deceased. Mrs. Carol Palmero first came under my care on March third of this year when she presented with chronic liver disease and its sequelae, that is, jaundice, ascites, and pleural effusion. Her illness dates back some five years to the installation of urea formaldehyde insulation in their home. There was no history of prior liver disease, and there was no evidence for viral hepatitis or alcoholism. I believe high levels of formaldehyde were measured in the home ambient air but I refer you to Mr. Palmero for those details. For further details of her early illness, I refer you to her previous physicians.

On April 29 of this year Mrs. Carol Palmero died of terminal liver disease. An autopsy is being performed by the medical examiner of the State of Connecticut at the University of Connecticut in Farmington, Connecticut. That report is pending. Although it may never be proven definitively that urea formaldehyde was the toxic agent that initiated her chronic liver disease, I believe the documented exposure and the subsequent course of her disease is consistent with this diagnosis.

I hope this letter will be of aid in your investigation of the urea formaldehyde issue.

Sincerely,

Kenrick E. Hom, M.D.

KEH:naw

Mr. PALMERO. My son, David, was on the swim team in high school. By coincidence, he required a physical exam shortly before we had the house insulated and he was found to be in excellent health. Now he can't go near a chlorinated pool, has hypoglycemia, and has ulcerative colitis.

My daughter, Dianne, continues to have recurring stomach aches and easily catches colds.

I lost about 15 to 20 pounds, which I cannot regain, and have a low energy level and poor circulation.

The financial burden has been staggering—in excess of $100,000. My original house would have been paid for in 1982. The payments were only $70 a month. My payments for the house we live in now are $800 a month. I cannot afford this, so the bank has given me what is known as negative amortization. Every month I pay $570 and owe the bank the rest. So the bank will not permit this to go on indefinitely. Obviously, sooner or later I have to sell this house before they foreclose on me.

One thing I would like to make clear is that Connecticut has banned UFFI in June of 1981 and that law still stands.

I would also like to mention that testing a house costs from $35 to $200, depending on who does it and how accurate it has to be.

In answer to Mr. Holloway's question, our lawsuit has been in the works for over 4 years, with no end in sight. Both the installer and manufacturer have filed bankruptcy. They have about a quarter million dollars of insurance, total aggregate insurance. That means if they have 100 lawsuits and the court finds in favor of the victims, that quarter million gets divided among the 100 lawsuits.

I have some charts I would like to show you on formaldehyde versus carbon monoxide, if you will permit me to go to the back of the room.

You all know that carbon monoxide is a poison. Well, formaldehyde is also a poison. Some people die from carbon monoxide and some don't. But it will kill everybody eventually at some predetermined level. I would like to have you look at the thickness of this black line down here, and I will extend that line and go up to another chart, and now we're talking about formaldehyde. These are the levels of formaldehyde, much lower than the carbon monoxide. Carbon monoxide is a "pussy cat." When you talk about levels of 0.01, the space limitation for formaldehyde is 0.1 part per million on 90-day space flights for healthy individuals. Also, there are at least two cases I know of where infants died with less than 0.5 part per million formaldehyde.

I would like to thank you for hearing my story. I was not extended the same opportunity by Congressman Rosenthal during his hearings. They did not like what I had to say.

I will be happy to answer any questions you may have.

Mr. BEDELL. Thank you very much, Mr. Palmero.

I think we will go ahead and let Maureen Leyda testify and then we will question both witnesses together.

Ms. LEYDA. Thank you, Mr. Chairman.

I am a consumer and I did become a member of SUFFER after my family became sick from urea formaldehyde foam insulation.

My name is Maureen Leyda, and I live in Colchester, Conn.

12-485 O - 83 - 3

In August 1975, we purchased a house that was insulated by the previous owner with urea formaldehyde foam insulation.

During the next 2 years we lived in our home, various symptoms appeared and increased in severity. Sore throats in the morning, nausea, headaches, coughing, eye irritations, the children had frequent nose bleeds, swollen glands, and were very tired all the time. My middle daughter became so ill with swollen spleen and lymph nodes that she was unable to attend school and had to have a tutor.

In November 1977, on the advice of our physician, we moved out as he suspected formaldehyde poisoning. The town of Colchester Health Department and the State of Connecticut Health Department were notified by Dr. Barton that he suspected formaldehyde poisoning. No assistance was made available from the town health department or the State health department, so Dr. Barton called in a private testing lab, Baron Consultants of Milford, Conn. The results of the test confirmed that there were indeed large amounts of formaldehyde gas in the house, emitting from the UF insulation. In the attic the reading was 26 parts per million, and in the rest of the house it was 1 to 2 parts per million. But that was in December 1977 and there was no heat on at that time.

The price of the testing was $175, and I do have a report of that which I will submit to the committee, Mr. Chairman.

In December 1977, we made complaints to the Connecticut Consumer Protection Agency and to the Federal Consumer Product Safety Commission regarding urea formaldehyde foam insulation. We received no help or advice from any of these agencies.

In August 1978 we submitted testimony to the Connecticut Governor's Task Force on Urea Formaldehyde Foam Insulation.

In October 1978, we received a reply from HUD, from Joseph F. Smith, Acting Director, Division of Consumer Complaints, Department of Housing and Urban Development. The only assistance we received from them was that they suggested we contact our State consumer protection agency.

On April 12, 1979, an agreement was made between the State of Connecticut and the insulating manufacturer, whereby they, the manufacturer, agreed to correct insulation problems if it was proven that the urea formaldehyde foam insulation had caused adverse health effects. Unfortunately, because our home was insulated prior to the agreement, we were excluded from the agreement.

On April 25, 1979, Congressman Dodd made inquiries on our behalf to the Consumer Product Safety Commission. On May 10, 1979, Congressman Dodd was informed that negotiations between the State of Connecticut and the foam manufacturer were still continuing on our behalf.

On November 16, 1979, Congressman Dodd wrote to the Connecticut Consumer Protection Agency asking for further information. He was again informed that negotiations were still continuing on our behalf.

In December 1979 Sue Nichols, who is the executive assistant to the commissioner, the State of Connecticut Consumer Protection Agency, and Mark Giuletti, from the State of Connecticut Public Health Toxic Hazard Section, came to inspect the house. Miss

Nichols said that negotiations were continuing, and that the chemical company would be removing all the foam from the house.

On February 26, 1980, the Consumer Product Safety Commission held hearings in East Hartford, Conn., regarding the problems with UF foam insulation. I testified at the hearing regarding the problems we had trying to get it resolved.

In June 1980 Sue Nichols came to visit again, with Paul Chasse, vice president of Rapco Foam. He inspected the house and took samples of the foam insulation with him. He agreed that we certainly had a problem and that he would go back and see what he could do. He was told by Miss Nichols that all the foam should be removed and remedial work performed. We heard nothing further from Paul Chasse or Rapco Chemical Co.

In July 1980, my husband and myself requested a meeting with Mary Heslin, Consumer Protection Commissioner. At that meeting was Miss Nichols, Mark Giuletti, Toxic Hazards, and Jim Rice, EPA. Everyone agreed that we certainly had a problem, but the State had no way of forcing the chemical companies to correct the problem. Mrs. Heslin said our best hope was to try to resolve it through the court system, but they would still continue to try and bring pressure on the chemical company.

On July 22, 1980, the State health department came and tested the house, using the Drager method, and reached the maximum reading of 10 parts per million in the attic. I should state here that some of the chemical companies have refuted the Drager method that the States were using at that time. The Drager method doesn't measure very, very low amounts, unlike the chromotropic acid test, and neither does it measure extremely large amounts. But you do get an approximate reading. We wondered, like Mr. Hiler had mentioned before, that if in time it would dissipate, but apparently it didn't because that was the maximum reading that the Drager method went up to, which was 10 parts per million.

On July 29, 1980, our attorney sent a letter to Rapco's attorney, again requesting that the foam be removed from the house and all remedial work be performed. On October 15, 1980, we received a letter from our attorney saying Rapco would remove the foam from the attic only.

On October 17, 1980, Rapco's attorneys were notified that that was not sufficient and that all the foam should be removed and that there was no longer any homeowner's insurance available to us until all the foam was removed from the dwelling.

Despite many futile inquiries, there was no further response until August 26, 1981, when we received a letter from our attorney informing us that Rapco Foam had entered into bankruptcy proceedings which prevented us from pursuing our suit against them.

In November 1980, I told the bank holding our mortgage that I was no longer going to pay on a house that I couldn't live in. I felt that my husband and I had done everything we could to try and resolve the problem. The bank had charged us to appraise the property and we didn't feel we should be paying for the next 21 years on a worthless house, that we had put our life savings into this property and that was enough of a loss.

After considerable negotiations with the bank, it was agreed to remortgage the property and to try and restore our home. It was at

a higher interest rate, so the extra interest we will be paying back is $38,319 and the $20,000 it is costing us to have the insulation removed and our house restored. If you add that to the loss of rental income from our cottage for the past 5 years, our legal and medical expenses, our monetary loss is over $100,000.

I feel it is very wrong to expect the consumer to bear the burden of cleaning up the chemical company's mess. I suppose there are those people who would also say why should the Government pay. Well, I think they should. Departments of the Government encouraged people to insulate their homes. In fact, in listening to some of the advertisements, it was considered almost unpatriotic if you didn't. You could obtain low-interest loans to install this stuff. I feel that this insulation was totally inadequately tested by the manufacturer and the Government who encouraged people to use it. Then, when things started to go wrong, it is the consumer who has borne the burden. The Government agencies have fallen all over themselves passing the buck and the chemical companies have hidden behind the liberal chapter 11 bankruptcy laws. That people should have to suffer like this—emotionally, medically, and financially—without hope of any recourse from the courts or Federal Government, is a disgrace.

I do not expect you to solve the problem. No one can give us our health back. But you can assist in a small way to ease the financial burden.

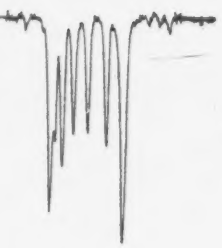
Thank you.

[The attachments to Ms. Leyda's testimony follow:]

BARON CONSULTING CO.

analytical services

P.O. BOX 663, ORANGE CT. 06477



December 28, 1977

To: Mrs. Maureen Leyda
Pickeral Lake Road
RR 1
Colchester, Ct. 06415

From: Dr. Harry Agahigian

Re: Analysis of Household Air: 20356

Samples of air were taken in the attic, daughters bedroom, mothers bedroom and also a sample of the cured insulation. The elemental analysis of the cured foam showed the material to be a urea type foam:

Carbon	35.03
Hydrogen	6.02
Nitrogen	24.69

An infrared spectrum of this material is typical of urea-formaldehyde resin. A water extract of this foam had a pH of 3.40. The foam tended to be powdery and crumbled easily to the touch. If the material is properly cured the foam should not crumble as readily as it does.

The formaldehyde content in the air samples were determined using gas chromatography:

Attic	26 ppm
Daughters bedroom	1 - 2 ppm
Mothers "	1 - 2 ppm
Attic Water absorption	Greater than 10 ppm

There may be variation in levels due to air conditioners, humidity, etc. The OSHA levels are 3.0 ppm. We will be evaluating further some methods and sampling techniques for obtaining better composites as these materials are reactive and tend to oxidize, polymerize and the like.

Please review the data and contact me if you have any questions or wish details.

Harry Agahigian

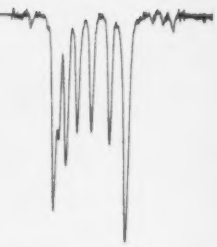
HA/c

Harry Agahigian, Ph. D.
Chief Consultant

BARON CONSULTING CO.

analytical services

P.O. BOX 663, ORANGE CT. 06477



Feb. 23, 1981

To: Mr. Charles Leyda
Pickerel Rd.
Colchester, Ct. 06415

From: Dr. Harry Agahigian

Re: Formaldehyde Analysis: BC# 29567 Date of Sampling 2/21/81
Methods: Chromotropic Acid

Samples were taken at the following locations at the Leyda residence:

1. Front bedroom facing driveway and road
2. Front bedroom facing road
3. Composite of upstairs hall and bathroom
4. Composite of Attic
5. " " "

The level with bedrooms was at 60^{0}F, the attic at 62^{0}F. Relative humidity was 70-80%.
Results:

1.	Front bedroom (I)	ppm CH_2O in air	4.3
2.	Front bedroom (II)	"	0.3
3.	Hall-bath	"	1.3
4.	Attic	"	38
5.	Attic	"	44

Please contact me if you wish experimental details or wish to descuss the data.

Harry Agahigian

Harry Agahigian, Ph. D.
Chief Consultant

HA/c

Mr. BEDELL. Thank you very much, Maureen.

Mr. Conte?

Mr. CONTE. First of all, I want to thank both of you for coming here today and for your testimony. I am certainly deeply saddened by your testimony. I doubt very much whether there is a person in this room who hasn't been moved by what you have said. It's a nightmare and you are to seek help and hopefully we can do something.

I know Connecticut was the first to take action on this issue, and I believe that maybe both of you had some responsibility in that action. Did either one of you play a role in that?

Ms. LEYDA. Yes, I worked very, very hard on that. Carol Palmero worked very, very hard for that, too.

Mr. CONTE. How many people do you know had a severe experience with formaldehyde? Do you have any——

Mr. PALMERO. In Connecticut?

Mr. CONTE. Yes.

Mr. PALMERO. About a dozen I know of personally.

Ms. LEYDA. Yes, I would say between 15 to 20 people. Many people were very reluctant to testify. That was the thing. They just sort of wanted to wash their hands of it and that was it.

Mr. Chairman, I do have some pictures here of our house that we have pulled apart. You can see the house as it was before and afterward. I think, Mr. Hiler, after you see these pictures you might agree that nobody would go to these lengths unless they had a very, very serious problem.

I know before you have mentioned about low parts, that people have experienced illnesses. But in our case it was very, very high parts. These were well above the Federal levels that OSHA allowed workers to be in, and we are not talking about 0.1 or 0.01 or whatever. I think you will agree in these cases and in quite a few others they well exceed what the Federal Government allows workers to be exposed to.

I think when you have a serious problem as this you can't turn on air-conditioners or paint the walls with Glidden Insul paint. I had discussed this with the manufacturers, with installers, trying to solve the problems before we went into the court system. I found they sort of went to the ridiculous to the sublime, some of the answers we got, and that actually nobody really knew what to do about the problem. They just sort of said yes, you have a problem. It was like we were just passed on down the line.

In some cases, if they had used just commonsense in the replies we were given—we were very fortunate with our own doctor. But, of course, he didn't know for the 2 years that we had been suffering from these illnesses what the cause was. We had the water tested, et cetera, and I think a lot of people weren't aware at that time, certainly not in 1975, that there were problems.

Mr. CONTE. You sought some help in Connecticut. Who gave you help?

Ms. LEYDA. Well, really, I wrote to every single State representative, all 138 of them, and I contacted 36 senators, which is every single one, and I did lobby up there. I got copies of journals from the American Medical Association that did make people aware of the problems with this. I did a lot of research on my own, and Dr.

Barton and Dr. Rosenfeld did help me, too. All of this was presented to our health committee and that is why in the State of Connecticut it was passed.

Unfortunately, it wasn't sort of any help to me personally, but I did feel the problem should be stopped from going any further.

Mr. CONTE. How many members do you have in SUFFER now?

Mr. PALMERO. About 500.

Mr. CONTE. Thank you, Mr. Chairman.

Mr. BEDELL. Mr. Hiler?

Mr. HILER. Mr. Chairman, I don't really have any questions. I would have one thing that I would enter in the record on behalf of Chairman Rosenthal and his committee.

While you may not have been invited, there were several people from SUFFER who did appear. I think there was a panel of about five or six people and they did testify for a combined total of probably close to an hour. So while you in particular may not have been asked, there were members of SUFFER in the first day of testimony and, in fact, might have been the lead-off or second set of witnesses after Nancy Stewart from the Consumer Product Safety Commission. So I don't think Chairman Rosenthal purposely tried to keep you from being able to appear——

Mr. PALMERO. I'm afraid that's what is true. He purposely kept me—they didn't like my story and that's what the problem was.

Mr. HILER. Well, the chairman is very sympathetic to your story. But I don't run the chairman's committee.

I think, as Mr. Conte pointed out, that there is no question in anyone's mind that there have been people, and yourselves, who have felt the adverse effects of either formaldehyde as a chemical that you have an adverse reaction to, or through improper installation, or through something—where you talk about 10 parts per million, where certainly I don't think anyone would say 10 parts per million is something you like to have exist.

I think the point that those who might not be in favor of the Government providing a remedy in this particular case would say is we do have a legal system that is set up for remedy, and while Mr. Conte has pointed out in the case of black lung we have taken a case where just the fact that you were in a coal mine presupposes you would have black lung. The instances are extremely rare where the Government accepts liability for something it was not directly involved in. I think that is one of the discussions, and of course, it will be a topic of discussion, not only here in the case of formaldehyde, but I am sure in other areas as time comes along and each of these will be decided on its merits at the given time, and I am sure the gentleman from Massachusett's bill will be given every consideration.

I yield back.

Mr. BEDELL. Thank you, Mr. Hiler.

We do have a vote on the floor. We have until the next bell, I think, before we need to break.

Mr. Palmero, there was an autopsy for your wife. What did it indicate?

Mr. PALMERO. It indicated cirrhosis of the liver. It cannot show what caused the problem. It's just been proved that that was the damage.

Mr. BEDELL. I'm not a doctor. What normally causes that problem?

Mr. PALMERO. Normally, alcoholism is No. 1.

Mr. BEDELL. Was your wife an alcoholic——

Mr. PALMERO. No.

Mr. BEDELL. Did she drink heavily or anything?

Mr. PALMERO. No.

Mr. BEDELL. One of you mentioned the attic. Do you live in the attic?

Ms. LEYDA. No, we don't. We do have a walkup attic with a door. I do have the pictures here, Mr. Chairman, if I could bring them up to you.

Mr. PALMERO. You see, they insulated her attic, which is a "no no." That's why she had so many problems.

Mr. BEDELL. Are you still living in the same house?

Ms. LEYDA. No, we are not. As you can see by those pictures, it is completely torn apart. The money that we borrowed isn't sufficient to restore our house completely. We are sort of half restored and half not at the present time. We are living in a small cottage that we own on the property.

Mr. BEDELL. But you plan, if you do get it completed, to move back into your home?

Ms. LEYDA. Yes; we did have steam cleaning done after the walls were gutted and the insulation removed. We were still getting readings because it apparently had been in so long, and in such high levels, that it had penetrated the wood. So after airing it out for 3 months, we had readings done, and then we decided to steam clean it from top to bottom, which we did. Unfortunately, because of the high heat and the moisture, all the wooden floors in the house warped. So those have to be done again, and it has rather extensive water jet damage to all the interior woodwork.

It is an older home, an older Federal home, and it is very difficult to replace the woodwork and things like that.

Mr. BEDELL. Are you still living in your home, Mr. Palmero?

Mr. PALMERO. No; my house stood empty for 1½ years, and then cured, and I was able to sell it.

Mr. BEDELL. Cured?

Mr. PALMERO. Cured.

Mr. BEDELL. What do you mean by cured?

Mr. PALMERO. The insulation cured. In other words, the first test was 10 to 15 parts per million. Two months later it was about 1 part per million. And then 7 months later it was zero in the living area and seven-tenths of 1 part per million in the attic. At that point I finished it, and redid the inside, and sold it.

I was able to sell it before the publicity hit the market.

Mr. BEDELL. Are there any other questions? If not, we have a vote on the floor of the House, and it will very possibly be followed by another 5-minute vote. Unless there is objection among the committee members, it would be the Chair's opinion that we should recess, and try to be back in about 15 minutes or so. Is that agreeable?

Mr. CONTE. That's good.

Mr. HILER. Fine.

Mr. BEDELL. The subcommittee will stand in recess, and you folks will not have to wait. Thank you.

[Short recess.]

Mr. BEDELL. The committee will come to order.

Our last witnesses are Mr. John Murray and Dr. Harold Imbus of the Formaldehyde Institute. Would you gentlemen come forward.

It would be the hopes of the chairman that we could conclude by 12 noon. We have 15 minutes. So any summary that you would care to do of your testimony would be appreciated. Whatever you do, your full testimony will be entered in the record.

TESTIMONY OF WILLIAM H. SMOCK, SECRETARY, THE FORMALDEHYDE INSTITUTE, INC., ACCOMPANIED BY DR. HAROLD R. IMBUS, OCCUPATIONAL PHYSICIAN AND CONSULTANT

Mr. SMOCK. Thank you, Mr. Chairman. Mr. Murray couldn't be here today. He is going to the hospital for an operation.

Mr. BEDELL. Would you identify both of you then for the record?

Mr. SMOCK. Yes, sir. My name is William Smock, and I am here today as the secretary of the Formaldehyde Institute. With me is Dr. Harold R. Imbus, an occupational physician and independent consultant with wide experience in formaldehyde-related health issues. Dr. Imbus was formerly the medical director of a member company and will provide part of our testimony.

I would like to begin by describing the Formaldehyde Institute and our program. The institute is a group of companies and trade associations representing every phase of the formaldehyde industry. Membership currently includes more than 70 companies and trade associations, and extends beyond the United States.

The Formaldehyde Institute is committed to addressing the important issues confronting the formaldehyde industry, to establishing a cooperative relationship with governmental agencies, and to developing the information necessary for making reasonable management and regulatory decisions regarding formaldehyde.

The institute was organized specifically to develop technical and scientific information relating to potential health effects of formaldehyde; to cooperate with various Federal and State agencies in the development of appropriate standards and regulations relating to formaldehyde and formaldehyde-based products; and to provide industry representatives with a mechanism for responsible communication with such agencies.

Since it was established in March 1979, the Institute has spent well over $1 million to initiate health studies and toxicity studies to determine the possible health effects.

These studies include: One, inhalation toxicity study of formaldehyde in the monkey, rat, and hamster. Data indicate that at exposures common in the home and workplace, there are no irreversible health effects; two, percutaneous penetration of formaldehyde. A research effort recently begun to determine whether formaldehyde contained in wearing apparel penetrates the skin; and three, mortality study of workers exposed to formaldehyde. This is a joint study with the National Cancer Institute for the purpose of deter-

mining whether a statistical link can be established between chronic illnesses and formaldehyde exposure.

Also underway is an initiation/promotion study to determine whether formaldehyde might be an initiating animal carcinogen or a promoter when combined with a known carcinogen; and in vivo mutagenicity studies on formaldehyde to determine whether formaldehyde is mutagenic.

We believe that our efforts have provided valuable information to all parties—Government agencies, industries, and consumers—interested in formaldehyde. Further, we believe that we have assisted in the development of a urea formaldehyde foam insulation product standard that would adequately safeguard consumers.

Everyone needs to understand both the contributions and limitations, the good and the bad, of a chemical that has justifiably been called a "building block of our society." We could hardly live without formaldehyde. Our bodies produce it as a necessary metabolite to sustain the life process itself.

Formaldehyde was first manufacturered in 1889 and has become an indispensable ingredient in the production of thousands of industrial and consumer products. Today, about 1.4 million Americans are involved in making formaldehyde or formaldehyde-containing products. Those workers, employed in about 45,000 U.S. facilities across the country, earn about $18 billion per year. In 17 major industries, formaldehyde is essential to plant operation. In another 70 industries, it is an important basic raw material. In fact, formaldehyde manufacture and use accounts for about 8 percent of America's gross national product.

More formaldehyde is produced as a byproduct of natural or manmade processes than is manufactured by design. Formaldehyde is present in tobacco smoke. Incomplete combustion of hydrocarbons in wood produces formaldehyde. Automobile emissions alone release over 6 billion pounds per year.

The proposed legislations, H.R. 6389 and H.R. 6391, which would grant low-interest loans to consumers for the removal of urea formaldehyde foam is of concern to the Formaldehyde Institute because it assumes the findings of the Consumer Product Safety Commission in banning this product were correct. It is the opinion of the Institute that this legislation is premature, and Dr. Imbus will discuss some of the health reasons for our conclusion.

Dr. IMBUS. Good morning. I will discuss several of the medical issues.

First of all, there exists a significant scientific doubt regarding the carcinogenic potential of formaldehyde in man.

Second, there is general agreement among Government agencies that formaldehyde poses no acute or chronic risk at "ordinary" levels which are found in the home—and I will spend a minute just a little bit later to talk about some of the extraordinary levels similar to what you have heard about this morning.

Third, the only Government agency which has contradicted this near unanimity is the Consumer Product Safety Commission, which based UFFI on April 2, 1982.

Animal exposures in the Chemical Industry Institute of Toxicology chronic inhalation study are not comparable to those experienced by the human population. This study, which was conducted

over a 2-year period, used rats and mice and found only in rats a statistically significant rate of nasal cancer at the highest level of 15 parts per million. This level is well above the normal levels.

These tests, however, did indicate that there was a clear and distinct "no observable effect" level, considerably lower than that to which we are exposed. There are distinct differences in the way different animal species react to formaldehyde exposure. Even at the same ambient concentrations, depending upon the physiology and biological mechanisms, different animal species will have different effective doses.

The mechanism of how carcinogenic effects occur is critical. The high level of exposure which causes the nasal cells to be destroyed in rats exposed to 15 parts per million initiates a massive and rapid cell repair, or recovery, and cancer is therefore a secondary effect which occurs only if extremely toxic doses are reached.

Human epidemiology is probably the most persuasive evidence. Epidemiology studies reported to date have indicated no excesses of either a nasal or oropharyngeal or other cancer types due to chronic formaldehyde exposure. Despite the negative studies that we have done, further epidemiology studies should be done to better establish safe levels of formaldehyde exposure. These studies are underway. The definitive cancer mortality study is a cohort study by the National Cancer Institute and the Formaldehyde Institute involving 25,000 formaldehyde workers. Another epidemiology study in the United Kingdom will review 10,000 to 12,000 workers who have experienced long-term—that is, 15 years or more—exposure to formaldehyde. The National Cancer Institute study will be final in 1984, and the United Kingdom study will be completed next year.

There is an ever-growing list of epidemiology studies from the United States, Great Britain, Finland, New Zealand, Germany, and Denmark. Their findings are best summarized by the Danish study published in Lancet on April 17, 1982—and I quote:

> Long-term formaldehyde exposure in man is unlikely to carry an important risk for lung cancer * * * * the examination of a possible carcinogenic risk to man from formaldehyde shall be concentrated on more proximal parts of the respiratory tract—i.e., the nasal cavities, a target for which there is so far no evidence of an increased risk in humans.

To amplify just a bit on the remark of Dr. John Higginson, which was mentioned earlier here, he quotes further:

> In nearly all countries, irrespective of their degree of industrial development, the incidence of nasal cancer is surprisingly constant and in a number of developed countries where formaldehyde has been widely used, the risk of nasal cancer is, in fact, falling. All these data taken together are insufficient to completely exclude a minimal risk, but certainly they weigh heavily against the view that formaldehyde gas constitutes any considerable risk for nasal cancer to man.

Dr. Higginson goes on to further quote the same thing that Congressman Hiler mentioned this morning and I will not repeat that.

The American Cancer Society, as already mentioned, has also stated there is no evidence that formaldehyde is a carcinogen in man.

The acute effects of formaldehyde are well known, since it is an irritant and exhibits its main toxic effects upon the upper respiratory tract, eyes and skin. The upper respiratory tract has been

identified as the target organ for acute and chronic inhalation effects in recent laboratory experiments.

Attempts have been made to establish irritant thresholds for formaldehyde exposures. Evidence from a control chamber study with volunteer subjects indicates a threshold for sensory irritation at levels of formaldehyde from 0.8 to 1.2 parts per million. NIOSH, in an extensive literature review, concluded that the irritant threshold for normal human population is 1 part per million. A continuous inhalation study with several animal species indicates that there is no cellular damage at this or lower levels of formaldehyde exposure.

At concentrations from 0.4 to 0.7 part per million, formaldehyde produces some sensory irritation in some subjects, but the response is still not as strong as that seen at higher levels. Subjective responses of slight discomfort were reported at levels below 0.5 part per million, but no dose response relationship was established.

Regarding pulmonary allergic responses, there is no scientific evidence that ambient exposure to formaldehyde produces pulmonary sensitization reactions. It should not be overlooked that other airborne substances commonly found in the home are also capable of producing variable nonspecific complaints and irritant symptoms similar to those reported for formaldehyde.

The Center for Disease Control recently held a conference which focused on indoor air quality. Twenty-two case histories were investigated and nausea and vomiting were reported for each case. Investigations were taken in each of these cases to determine the causative agent. Formaldehyde was not found in these environments at measurable levels. Substances such as solvents, fiberglas, rug shampoo, fungal spores, and dust were identified as the probable agents. The entire indoor air pollution question needs to be addressed before formaldehyde can be labeled as a definitive problem.

Just to finish, regarding some of the extraordinary levels that have been reported, these are well-documented types of problems with such very, very high levels. The simple point is that there need be no reason for such levels. There is a technology for controlling such levels, and people need not become ill due to such levels. It concerns me greatly, with the experience I have had, the seemingly "ban" mentality that exists in some of the regulatory agencies in Washington. We have many, many numerous types of things which we are exposed to which have the potential for causing harm if they are not well controlled. There is a means to control this, and this is a safe chemical if properly controlled. I think we can all be very sympathetic with the types of cases heard here, but these cases do not need to occur.

Mr. SMOCK. To briefly summarize, the positions of EPA and the FDA were discussed earlier so I will not go into them.

It is our understanding that HUD is currently working on a standard for formaldehyde in mobile homes which is expected to be published around September of this year, and will reportedly address both the acute and chronic risks for formaldehyde.

The CPSC ban is currently the subject of litigation brought by the Formaldehyde Institute in the U.S. Court of Appeals for the Fifth Circuit. The Massachusetts Superior Court, as was stated earlier, overturned that State's ban decision of UFFI.

In closing, I would like to state that the issue of risk of injury from UFFI is far from closed despite CPSC's ban. Many responsible, respected scientists remain unpersuaded of formaldehyde's carcinogenicity at levels found in homes. The Formaldehyde Institute urges you not to enact this legislation until all the evidence is available.

Thank you very much.

Mr. BEDELL. Thank you.

Mr. Conte?

Mr. CONTE. Thank you, Mr. Chairman.

You, sir, assisted in the development of the urea-formaldehyde foam insulation product standard that would adequately safeguard consumers. Isn't it true that the Formaldehyde Institute appealed the formaldehyde standard of 0.1 part per million set by the American Society of Heating, Refrigeration and Air-Conditioning Engineers, and you appealed to the ASHRAE Appeals Board last November?

Mr. SMOCK. Yes, sir, that's true.

Mr. CONTE. Is it not true, then, that the panel, of which one of the experts was chosen by you, upheld the standard?

Mr. SMOCK. I don't follow your question.

Mr. CONTE. One of the panel members, one of the experts who was chosen by you, upheld the standard.

Mr. SMOCK. Upheld the standard, but agreed that the standard needed further investigation. It is my understanding at this point that the record for revising that particular standard has again been opened by ASHRAE.

Mr. CONTE. You state that my bill assumes that the CPSC ban is correct.

Mr. SMOCK. Yes, sir.

Mr. CONTE. Well, that's not really so. My bill assumes that the CPSC ban has been made and that no matter whether the CPSC ban ultimately prevails or whether a safety standard is set up instead, individuals have suffered adverse effects and property values have suffered, as you heard earlier—they have in my hometown.

This legislation that I filed is not meant to back the CPSC standard. It is meant to help the individuals hurt who are exposed and have been financially hurt or have been physically hurt.

Mr. SMOCK. Yes, sir. On that point, the institute agrees that there has been significant harm in this whole area, both for the people who have suffered health effects and also we received many calls from all over the country shortly after the ban was announced and have heard some heart-rending stories of people who are significantly hurt by the economic consequences of the ban itself as distinct from the health effects.

I think the difference is our opinion that the remedy would be to undo the ban, which is why we are in court in the fifth circuit, so that there could be an industry response and arbitration mechanism to solve the real problems that do exist.

Mr. CONTE. But even if the ban was turned around in court, it is not going to help those people that have been hurt, physically and mentally. What are we going to do about them? Say, "the hell with you, that's just too bad"? What do you suggest we should do?

Mr. SMOCK. I don't believe anybody is suggesting that.

Mr. CONTE. We've got to do something.

Mr. SMOCK. Yes, sir, and we still stand——

Mr. CONTE. Either you guys are going to come across with some money and give them a hand, or the Government is going to do it. Somebody has got to help them.

Mr. SMOCK. I believe the institute is on record and has continued and remains on record that, as part of the product standard that we have recommended in 1980 and 1981 and is still on the record in court, part of that would be an arbitration mechanism system. That is not to say there would not be problems. There would be.

Mr. CONTE. If the CPSC ban is tied up in litigation for years, as it is likely it will be, with the cases you filed in the Fifth Circuit Court, the poor unfortunate guy out there who has been hurt, is going to be gone by the time all this is over with.

Now, you state that Government agencies are in general agreement that formaldehyde poses no acute or chronic risk at the levels which are found in the home. That gets directly into the controversy over EPA, does it not? EPA was on the verge of issuing regulations on formaldehyde as a toxic substance when the new direction of toxic substances stopped, and this Congress has held up hearings, and the Science and Technology Committee which, among other things, concerned evidence of the breakfast meeting between the representatives of the industry and the EPA. There is a clear signal out there that there is general agreement among the Government agencies, is there not?

Mr. SMOCK. I'm not sure what your question is. I'm sorry, Mr. Congressman.

Mr. CONTE. Well, you know, EPA hasn't made any final determination on this. They're still considering it——

Mr. SMOCK. Yes; I believe the 4(f) decision was simply that there is no cause for an emergency crash course-type of regulation, but that considered regulation under TOSCA is going forward.

Mr. CONTE. Is that so? That isn't a general agreement. Give me that again.

Mr. SMOCK. The 4(f) decision, as I understand it, is that there is not evidence for priority regulation on the carcinogenicity potential, which is what my remarks were intended to state. It is clear that formaldehyde is an irritant and is regulated as such.

Mr. CONTE. But there is no general agreement among the agencies?

Mr. SMOCK. On the carcinogenicity issue, I believe there is.

Mr. CONTE. You believe there is?

Mr. SMOCK. The only agency——

Mr. CONTE. EPA is still investigating. How can there be general agreement?

Mr. SMOCK. At this point, the only agency that we are aware of which believes formaldehyde to be cancinogenic is CPSC. What we are recommending is simply that the evidence isn't in on carcinogenicity, but the evidence at this time does not support a finding of carcinogenicity, and that appears to be generally agreed among most Federal agencies.

Mr. CONTE. How do you react to this statement made by the National Homeowners Association, which I ask be submitted for the record.

To a far greater extent and with disregard for the concern of there being safety hazards associated with their product, the urea formaldehyde industry likewise promoted its use. The industry argued against the existence of significant hazards until, in the face of overwhelming evidence that has existed for years, their product was banned. Thus, urea formaldehyde manufacturers, the installers, share significant responsibility for the damages suffered by the homeowners who have installed UF foam.

Mr. SMOCK. It is a partially true statement. The evidence is not overwhelming, nor has it existed for years, but they have suffered the consequences. Most of the problems that we have seen, that are real and documented problems, have resulted from improper installation, that had the standard been in effect as late as 1980 some of these problems—of course, not all—could have been avoided.

Mr. CONTE. Why are you against Government assistance, then?

Mr. SMOCK. Sir?

Mr. CONTE. You found nothing wrong with that statement by the homeowners, so why are you opposing some Government assistance to these poor people?

Mr. SMOCK. As I stated before, something needs to be done. It just doesn't seem to be an appropriate function of the Government at this point.

Mr. CONTE. What do you suggest should be done?

Mr. SMOCK. That the ban be overturned.

Mr. CONTE. You're living in a dream world. What's going to happen to the other poor people out there that have suffered already? Thousands of people have suffered, you agree with that?

Mr. SMOCK. Yes, sir.

Mr. CONTE. You have already. So you say just overturn the ban and everything is going to be totally all right.

Mr. SMOCK. I don't suggest it's going to be totally all right, but at least that is a step to begin addressing those problems.

Mr. CONTE. I don't think you would feel that way if you lost your home as a result of this.

Mr. SMOCK. Possibly not.

Mr. CONTE. Thank you, Mr. Chairman.

Mr. BEDELL. I don't see the correlation. If there is a problem and if something needs to be done about the problem, I don't see how removing the ban addresses the problem. Is there something I don't see?

Mr. SMOCK. Part of our argument is in court and has been in over 30 hearings with the Consumer Product Safety Commission, that a product standard would adequately safeguard homeowners and provide an arbitration mechanism similar to the Wisconsin and Minnesota approaches, where we have worked with State regulators in trying to get that regulation adopted.

Mr. BEDELL. But is there some way that that would address the problem of the two previous witnesses we had before us?

Mr. SMOCK. At this point it would be difficult, but at least there would be a mechanism there.

Mr. BEDELL. And that mechanism would be that they could, what, go to arbitration?

Mr. SMOCK. Some type of arbitration mechanism as a function of the product standard.

Mr. BEDELL. And they could then go to arbitration based on—you would favor legislation that said that they could go to some type of

an arbitration panel and receive relief for what they have suffered; is that correct?

Mr. SMOCK. That has been the position we would——

Mr. BEDELL. Who would pay that relief in case they prevailed?

Mr. SMOCK. The actual mechanics have never been developed because we got the ban. My working assumption would be a joint industry-Government program.

Mr. BEDELL. So the industry would be favorable toward a program that somehow set up a simple method for people such as the previous two witnesses we have had, where they could go to some type of a panel, and if the panel felt they had been damaged by what had been done, the industry would pay part of the damages and the Government would pay part of the damage to reimburse them for any damage they may have suffered; you favor that, is that correct?

Mr. SMOCK. We have never had any objection to that kind of approach, no, sir.

Mr. BEDELL. Thank you.

Mr. Conte.

Mr. CONTE. In following up what you say, you say the answer to all this is to do away with the ban and appeal the ban. How does that affect someone who has a high level of this in their homes and are living under fear that they, as a result of this, could incur cancer? How does it help them by lifting the ban?

Mr. BEDELL. Would the gentleman yield to me?

Mr. CONTE. Yes.

Mr. BEDELL. My understanding is that he says he would favor a proposal which would say that person could then go to some sort of a panel, and if the panel felt he had been damaged, that industry would pay part of those damages and the Government would pay part of those damages, if I understand you correctly.

Mr. SMOCK. I perhaps oversimplified when I just simply said get rid of the ban, because that is the alternative to the ban that the institute has recommended since it has been proposed.

Mr. BEDELL. I think that's interesting, that they would agree to pay a part of reimbursement for anybody that had been damaged, and the Government would pay part of it.

Mr. CONTE. That isn't the thing that troubles me, as much as how does it eliminate the danger of a possibility of a person incurring cancer as a result of this? That answer hasn't come forth yet.

Mr. SMOCK. At the levels found in the home—and perhaps Dr. Imbus can address this better than I, being a physician—the studies we have done in noncomplaint urea formaldehyde foamed homes compared to foamed homes—in fact, it was done in Iowa by the University of Iowa—the levels are comparable and they were on the average of 0.05 and 0.06, the non-UFFI homes being slightly higher in that particular study. This is far below 0.5 parts per million or 0.4 parts per million, which is what our doctors tell us—and Dr. Imbus can speak to that—are far below levels that represent any chronic or acute health risks, except for some sensitive individuals.

Mr. BEDELL. Mr. Hiler.

Mr. HILER. Mr. Chairman, I think there are a couple of points I would make before asking several questions.

One, I think there has been a loss of market value in homes that have been insulated by urea formaldehyde foam insulation, and if the Consumer Product Safety Commission decision was not founded on good scientific data, not a good scientific approach, then, in fact, by lifting the ban because it is not a valid ban, and by conducting these studies and determining that there are levels of formaldehyde foam and formaldehyde in the air that are not harmful and are not carcinogenic, then that has the effect of remedying the situation where people lost their market value.

That is the thing about getting rid of the ban. If the ban is not appropriate, it shouldn't be kept on. I think that is the part that needs to be determined and that is where I would go along and say I think there is a tremendous amount of scientific evidence that would indicate that at the low levels of exposure it is not carcinogenic. I am not a scientist but just reading some of the facts.

The other thing is whether or not the Government has a responsibility here. Now, I don't know how many die each year from having smoked cigarettes, but I would say the number far exceeds, the health costs and health effects, far exceed whatever we have with urea formaldehyde foam. And yet there has been no one coming to the Congress saying that the Government should make the individual whole for damage suffered in smoking.

Mr. CONTE. Would you yield there?

Mr. HILER. We have 50,000 people a year killed in auto accidents——

Mr. CONTE. Will you yield on the cigarettes, though?

Mr. HILER. Certainly.

Mr. CONTE. Congress passed a law and the administration carries out that law saying it is dangerous to smoke cigarettes.

Mr. HILER. Right, and we don't ban cigarettes, and we also don't remedy people who die from lung cancer caused by cigarette smoking.

Mr. CONTE. Because they have such a hell of a strong lobby they are paid subsidies to grow tobacco around here, and still we know they are killing people with cancer.

Mr. HILER. I think my point, Mr. Conte, is that we do not live in a riskless society and that it is impossible to make people whole for every risk that may exist in our society. I think if we begin to construct laws that say the Government has the responsibility for anything that ever happens in our society, the taxpayer cannot afford that cost. Ultimately, the Government's ability to make people whole revolves around their ability to tax people. I think people generally feel that the level of taxation is getting to a point where we need to use a little bit more common sense in the things we do.

One of the things that I would just like to touch on for a minute—and either one can respond to this—has to do with this CIIT study that was the basis of much of what the Consumer Product Safety Commission determined.

Could you give your comments on the CIIT study?

Dr. IMBUS. In the first place, the CIIT study was a good study. There was nothing wrong with that study——

Mr. HILER. Let me interject. Did the person who conducted the CIIT study determine that formaldehyde was a carcinogenic risk in humans?

Dr. IMBUS. No, sir. No. As a matter of fact, the people responsible for the CIIT study are the very first people to say there is no such relationship that they're aware of. They will not say there is or there isn't, but they say you cannot make that extrapolation at this stage from this experiment.

Now, what happened at the CIIT study is that the rats were exposed to 15 parts per million. And the rat has to breathe through the nose, so the rat is going to get a very large dose on the nose. This literally caused the destruction of the cells lining the nose of the rat. This, then, very abnormal situation resulted in a rapid regeneration of cells. These cells were just proliferating rapidly.

Well, whenever you have that kind of situation, the gene mechanisms can go awry. Basically, you can get a cancerous cell. This is simply what happened.

Now, there were actually ulcers and sores on the rat's nose. If you were to expose human beings to a level continuously that caused this type of nasal destruction, they would not tolerate it. They would not stay there. So it is not an analogous situation whatsoever.

Mr. HILER. And you said that the people conducted the study—in other words, the Consumer Product Safety Commission made a determination from the study that the people who conducted the study would not make?

Dr. IMBUS. That's right. The Consumer Product Safety Commission then used a technique called risk analysis, which is an extrapolation from an animal study, supposedly then to human beings, and saying that if humans were exposed to a certain amount this would be the increased risk of cancer. Even their own analysis predicted that something on the order of two excess cases of nasal cancer in the United States per year would be prevented by this ban. That's what their own analysis——

Mr. HILER. How many cases?

Dr. IMBUS. Two.

Dr. John Higginson says that such an analysis is silly. It was popular in the seventies and it is silly to do such a thing. So even if it were a correct technique, the risk would certainly be very small. There is absolutely no evidence, epidemiologically, that there is such a risk.

Mr. HILER. The two witnesses before you I think made a very valid point about being able to seek a remedy from the producer or the installer, and that these people had since gone out of business.

Where would the remedy come from? How would that remedy be able to be sought, and how does that fit in with your general agreement with an approach that would have some type of arbitration panel for people that had been affected?

Mr. SMOCK. In 1981, when we submitted our proposal, 13 manufacturers signed the voluntary standard which would have ultimately included an arbitration mechanism. I only know of one, perhaps two, left in business.

But the fact remains, if the ban were overturned, steps could be taken for some of the producing companies to consider going back into that business. I cannot today give you the specifics of step 2, 3, 4 and 5, but rather that this has been our position. We supported product standards and complaint mechanisms similar to Minnesota

and Wisconsin, where there is a complaint, and if a level is tested and it is shown to have a causal relationship with a formaldehyde problem, that someone from the installer to the producer would be involved in the arbitration to address the issue. But I don't have the specific A, B, C's to provide the subcommittee today.

Mr. HILER. Mr. Chairman, I yield back.

Mr. BEDELL. Thank you, Mr. Hiler.

Mr. Molinari.

First of all, I want to welcome you. I understand you had another committee meeting.

Mr. MOLINARI. Yes. It is still going on, Mr. Chairman, but I did want to come in for a limited period of time and try to participate.

First of all, do either one of you gentlemen smoke cigarettes?

Mr. SMOCK. I did until Labor Day.

Dr. IMBUS. No, sir, I do not. And, by the way, cigarette smoke does contain 40 parts per million of formaldehyde.

Mr. MOLINARI. Maybe that's why it has been banned, then.

Why did you give up smoking?

Mr. SMOCK. Sir?

Mr. MOLINARI. Why did you give up smoking?

Mr. SMOCK. I would like to tell you I gave it up for health reasons, but the fact of the matter is we recently adopted a baby girl and it was one of my elements of saving money from our family income because my wife stopped working.

Mr. MOLINARI. Interspersed through your testimony you continuously raise doubt. When you have been answering questions posed to you, there doesn't appear to be any doubt as to your position. But in looking at the language—and I have looked at it rather carefully—you do express doubt as to the fact that there could, indeed, be injury if not death caused by the substances that you produced and were installed.

Do you agree with that assessment?

Mr. SMOCK. From our look at the actual record of complaints, the only complaints we have ever found have been as a result of improper installations which could have been prevented by a product standard.

Mr. MOLINARI. So that where there is improper installation, we can anticipate there would be some adverse health results?

Mr. SMOCK. Yes, sir. There is no question that formaldehyde is very irritating and toxic. At very high levels, it is known to cause problems. The levels we heard this morning were high and they did result from improper installations.

Mr. MOLINARI. High enough to cause death in certain cases?

Mr. SMOCK. Sir?

Mr. MOLINARI. High enough to cause death in certain concentrations?

Mr. SMOCK. On that question, I defer to Dr. Imbus.

Dr. IMBUS. I think it is very doubtful that an individual could tolerate an environment high enough to cause death. They would have to be trapped in that environment.

If I could, I might just say one thing in partial answer to your question about expressing doubt and perhaps the analogy with cigarette smoking.

I quit because I was definitely convinced that it was a definite health hazard. I was strongly convinced of this. The epidemiologic evidence for such is, in my opinion, overwhelming. There is no such evidence for formaldehyde, in spite of the fact that it has been used and people have been exposed to substantial quantities for over 90 years.

Mr. BEDELL. Would the gentleman yield?

Mr. MOLINARI. I would be glad to, Mr. Chairman.

Mr. BEDELL. Before the gentleman came in, we had testimony from two other people. One gentleman at least had a doctor's report indicating that in the opinion of the doctor the death of the gentleman's wife had been caused by exposure to formaldehyde. This death was not, as I understand it, a death caused by cancer. It was a different type of problem.

We talk only about carcinogens. Do you, as a doctor, question the doctor's——

Dr. IMBUS. Obviously, I did not attend this woman so I can't make that presumption. All I can do is say to you that there are several levels of evidence in medicine. One is what we call anecdotal evidence. I have a case, and there was an exposure, and I think, and it is my opinion, that there was a cause and effect relationship.

We don't throw that out entirely, but nevertheless, that is considered not a valid type of evidence on which to make a conclusion. We have to have properly conducted epidemiologic studies which show that people are affected.

Mr. BEDELL. But my question is a little different question. You talk almost exclusively about cancer and carcinogens——

Dr. IMBUS. Yes.

Mr. BEDELL. His wife's death was not a cancerous death. It was a different problem. My question is, is it your medical opinion that deaths from other causes, such as his wife had, could not be properly attributable to exposure to formaldehyde?

Dr. IMBUS. At this stage, there is absolutely no evidence in the literature to substantial——

Mr. BEDELL. That's not my question. I'm not asking what the literature says. I am asking you, as a doctor——

Dr. IMBUS. Mr. Chairman, it would be my opinion, based upon that, that such a death would not be a cause and effect relationship.

Mr. BEDELL. OK. Thank you.

Mr. MOLINARI. I would like to pick up on a question that the chairman raised, and your answer, and that was the anecdotal workup.

Did I understand you correctly to say the anecdotal workup or study is not to be regarded as evidence to justify taking some measures as a result of that study?

Dr. IMBUS. If we take anecdotal studies as evidence, there would be few chemicals or environmental things that could not be implicated, because people have many different complaints and they are exposed to many different things, and if you take that kind of evidence, then where are we? We literally can accept the fact that any exposure to anything can create any problem in a human being.

Mr. MOLINARI. Maybe I don't understand what an anecdotal workup is. Let me just state what I think it is, and you correct me where I'm wrong.

If you were to take 1,000 homes where this type of insulation was installed, and then you took 1,000 homes where it had not been installed, or with a different type of insulation, and you went to the homes and you had a very detailed questionnaire, and you questioned them about their health habits and the health problems they have complained of, and if you found as a result of that, that those with the insulation that you have here as a subject matter there were serious complaints, numbers-wise, as opposed to the other, would that not suggest to you that, indeed, a problem may exist——

Dr. IMBUS. Yes.

Mr. MOLINARI [continuing]. And is not that the purpose of an anecdotal workup?

Dr. IMBUS. Yes; indeed, and that is not anecdotal. That is epidemiological. If that is done properly, that is a very good type of study.

For example, if I could just carry your question, say, on the liver disease, if I found in the 1,000 homes that had UFFI that maybe there were 50 cases of definite liver disease, and only one or two cases in the homes that didn't, if it was properly conducted, that would be an epidemiologic study. The difference is, though, if I am a doctor and I am given one patient that comes to me, and this patient has liver disease, lung disease, kidney disease, or whatever, and says, "I was exposed to formaldehyde; give me your opinion: Do you think formaldehyde created the problem?" I could say, yes or no. But if I said yes, that would be purely an anecdotal thing based upon one case. It is not considered valid scientific evidence.

Mr. MOLINARI. The next question, is formaldehyde a mutagen?

Dr. IMBUS. Yes, sir, it is a mutagen in vitro, which means it is a mutagen when you expose cells outside of the organism to formaldehyde. It can create mutagenic potential. When you expose a whole animal to formaldehyde, and you try to examine the systems that would be affected by mutagenic potential, you do not find it to be a mutagen.

This indicates that somehow the animal has a defense mechanism, that when the formaldehyde is taken into the body, it can be rapidly metabolized before it actually gets to the cells and creates the mutagenic potential.

Mr. MOLINARI. Can we agree that most mutagens are carcinogenic?

Dr. IMBUS. Most carcinogens are mutagens; 90 percent of carcinogens are mutagens. It does not necessarily follow that it goes the other way.

Mr. MOLINARI. I didn't understand totally what you said before about the cells being taken out of the body—is that what you're saying, the laboratory experiments, in other words?

Dr. IMBUS. Yes; if I take bacteria or if I take cells out of an animal and I culture those cells and put some formaldehyde in a concentration onto those cells, depending upon the system, I may produce mutagenisis; yes, that is a distinct possibility.

Mr. MOLINARI. Have you tried it?

Dr. IMBUS. I personally haven't, but I am quite familiar with some of the experiments that have. They have been conducted down at the Chemical Institute of Toxicology and other areas.

Mr. MOLINARI. You say "may." I am wondering, did it?

Dr. IMBUS. Yes; yes, they have. The only reason I say "may" is it would depend upon the system. But in some systems, yes, they have produced mutagens—right.

Mr. MOLINARI. I just want to ask one remaining question.

The thing that puzzles me about your statement is that you make the statement that there exists a significant scientific doubt regarding the carcinogenic potential of formaldehyde to man, and then on the last page, you say:

> In closing, we would like to state that the issue of risk of injury from UFFI is far from closed, despite CPSC's ban, and many responsible, respected scientists remain unpersuaded of formaldehyde's carcinogenicity at levels found in homes.

It seems there is recognition there that, indeed, the possibility exists. As long as that possibility exists in some minds, I don't understand why the opposition from your industry to the legislation here. If there is a doubt, should we not resolve that doubt in favor of the consumer, the person who might be injured? It is not costing you people any money and the Government is trying to respond here.

As long as you recognize that doubt exists—and I see that interwoven throughout your testimony here—I can't understand how you reach a conclusion that you should oppose this legislation.

Would anybody care to comment?

Mr. SMOCK. As Mr. Hiler pointed out before, we are talking about two types of harm. We are talking about a health effect problem and we're talking about an economic problem. The economic problem is caused, quite simply, by the fact of the ban. Some of the estimates I heard this morning on how much this would cost the U.S. Government assumed that the homeowner that has a health effect problem is the one that is going to apply for a loan. Based on the number and the wrath of consumer calls that we have received in our offices, I believe the economic harm has gone much broader than a couple of thousand people. I don't have a good number, but we do have anecdotal stories of people saving their whole lives and expecting their equity to fund their retirement and now, because of the ban of a product they have had no problems with and they are delighted with, they can't sell their homes and don't know what to do for retirement. So, there are two kinds of problems and eliminating the ban would address the economic problem.

Mr. MOLINARI. Just one last question.

You do cite a number of studies in here which support your position. Are there other studies that you're familiar with that would run to the contrary and, indeed, disagree with your conclusions?

Dr. IMBUS. There is no epidemiologic study to date that supports a conclusion that formaldehyde causes cancer. Where the major doubt seems to exist in the scientific community is a body of scientists who say—and I am one of these—you cannot extrapolate the rat results to man, versus another body of scientists who believe just as strongly that you can and you should extrapolate it. I think that is the major difference.

Mr. MOLINARI. Can you identify some of these groups that disagree with you?

Dr. IMBUS. Well, I think it was mentioned here earlier that——

Mr. MOLINARI. Other than those that have been mentioned. I am just trying to see if there are other areas out there that the committee could——

Dr. IMBUS. The ones that were mentioned here this morning are the primary ones that have come out and made this strong statement. There appears to be a great body of scientists that don't make statements either pro or con. When you talk with these people, they have serious doubts that formaldehyde is a carcinogen, but I am sure if you're on the other side of the fence, you can talk to others that feel the other way.

Mr. MOLINARI. I have no further questions, Mr. Chairman. Thank you.

Mr. BEDELL. Thank you, Mr. Molinari.

Mr. Smock, if I understood your testimony earlier, you indicated that you did agree that high levels of concentrations of formaldehyde in the air did present health hazards; is that right?

Mr. SMOCK. Yes, sir, it is a very strong irritant.

Mr. BEDELL. Do you know what those concentrations would be? Do you have an opinion of what it would be?

Mr. SMOCK. I would defer to Dr. Imbus on the levels questions.

Dr. IMBUS. Certainly, I think most everybody recognizes that three parts per million can be irritating to a fair percentage of the population. When you get up around 5, 7, or 10 parts per million, most people will have some irritation. You get into the order of 15 parts per million, that is quite irritating. Usually, the individual would leave the area. And 25 or 30 parts per million is generally intolerable and is capable of producing a serious effect on the respiratory system.

Mr. BEDELL. I have a little trouble with the fact that all we talk about is cancer, and if I understood——

Dr. IMBUS. These are acute effects I'm talking about.

Mr. BEDELL. As I understood the two previous witnesses, their problems were not cancer.

Dr. IMBUS. That's right.

Mr. BEDELL. But at least in this person's opinion they suffered some. You know, if your wife dies from it, that is pretty serious it seems to me. So, there are other concerns other than just cancer. I assume you would agree.

Mr. SMOCK. Yes, sir.

Dr. IMBUS. Absolutely. And some of the symptoms—and I'm not talking about the death—but some of the symptoms are, you know, quite typical of what one would expect with a very high exposure. I have no problem with that, but they were very high exposures.

Mr. BEDELL. Apparently, your belief is those exposures are caused primarily by improper installation?

Dr. IMBUS. Absolutely.

Mr. BEDELL. I guess the other thing that gives me a little problem—and maybe you didn't testify exactly as you meant to, I don't know—but if I understood you correctly, Mr. Smock, you indicated that you would tend to be agreeable to some sort of an opportunity where people who thought they had been harmed by the urea

formaldehyde insulation in their homes could have recourse to some sort of a panel wherein if, indeed, they had been, they would be reimbursed somehow by a combination of industry and Government payments. That was my understanding——

Mr. SMOCK. That was in response to a question. As part of a product standard that we have always supported and still support, there was an agreement on the industry's part to develop an arbitration mechanism. The details as I stated, I don't have and can't give you because they don't exist. Just my working assumption would be that if there were a complaint and if a cause-and-effect relationship were shown, there would be some form of arbitration and some form of redress through an industry-Government program. Whether that would be funding or governmental administration—for participation by Government—I can't say at this point.

Mr. BEDELL. The conclusion that I would follow from that—and maybe I'm going too far—would be that if we set up reasonable standards somehow, how we determine who had been damaged, or if we had them come before a panel, that then it would certainly be proper for the Government to give them a loan to correct their problems compared to just giving them money.

Mr. SMOCK. In fact, the institute has worked very closely with the States of Minnesota and Wisconsin who are in the process of developing administrative regulations that would do substantially that.

Mr. BEDELL. Are there any further questions? If not, we thank you very much for your testimony.

I want to thank you, Mr. Hiler, for your participation.

The committee will be adjourned.

[Whereupon, at 12:40 p.m., the subcommittee adjourned, to reconvene subject to call of the Chair.]

APPENDIX

APPENDIX A

97TH CONGRESS
2D SESSION

H. R. 6389

To provide loans under the Small Business Act for the removal of urea-formaldehyde foam insulation from residences, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

MAY 17, 1982

Mr. CONTE introduced the following bill; which was referred to the Committee on Small Business

A BILL

To provide loans under the Small Business Act for the removal of urea-formaldehyde foam insulation from residences, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. EXTENSION OF DISASTER LOAN PROGRAM TO LOANS FOR REMOVAL OF UREA-FORMALDEHYDE FOAM INSULATION FROM RESIDENCES.

(a) IN GENERAL.—Section 7(b)(1) of the Small Business Act is amended by adding at the end thereof the following:

"(C) to make loans (either directly or in cooperation with banks or other lending institutions through agreements to participate on an immediate or deferred

(guaranteed) basis) for removal of urea-formaldehyde foam insulation from any residence, including restoration of such residence which is appropriate as a result of such removal: *Provided*, That the principal amount of any loan authorized under this section shall not exceed $10,000: *Provided further*, That the rate of interest on any such loan shall be the rate prescribed for purposes of section 7(c)(4)(A)."

(b) EFFECTIVE DATE.—Subsection (a) shall take effect on the date of the enactment of this Act.

SEC. 2. MANUFACTURERS AND INSTALLERS OF UREA-FORMALDEHYDE FOAM INSULATION ELIGIBLE FOR CERTAIN LOANS.

(a) AUTHORIZATION FOR FISCAL YEAR 1983.—Paragraph (5) of section 20(n) of the Small Business Act (relating to program levels authorized for fiscal year 1983) is amended by inserting before "shall" the following: "is authorized to make $10,000,000 in direct and immediate participation loans with respect to the business of manufacturing or installing urea-formaldehyde foam insulation, but, except as so authorized,".

(b) AUTHORIZATION FOR FISCAL YEAR 1984.—Paragraph (5) of section 20(p) of the Small Business Act (relating to program levels authorized for fiscal year 1984) is amended by inserting before "shall" the following: "is authorized to

make $10,000,000 in direct and immediate participation loans with respect to the business of manufacturing or installing urea-formaldehyde foam insulation, but, except as so authorized,".

(c) EFFECTIVE DATE.—Subsections (a) and (b) shall take effect on October 1, 1982.

97TH CONGRESS
2D SESSION

H. R. 6391

To provide loans under the Small Business Act for the removal of urea-formaldehyde foam insulation from residences, to provide for certain tax expenditures relating to problems caused by such insulation, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

MAY 17, 1982

Mr. CONTE introduced the following bill; which was referred jointly to the Committees on Small Business and Ways and Means

---

A BILL

To provide loans under the Small Business Act for the removal of urea-formaldehyde foam insulation from residences, to provide for certain tax expenditures relating to problems caused by such insulation, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

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(a) IN GENERAL.—Section 7(b)(1) of the Small Business Act is amended by adding at the end thereof the following:

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(c) EFFECTIVE DATE.—Subsections (a) and (b) shall take effect on October 1, 1982.

SEC. 3. NEW DOLLAR LIMITATION UNDER RESIDENTIAL ENERGY CREDIT WITH RESPECT TO EXPENDITURES FOR UREA-FORMALDEHYDE FOAM INSULATION.

(a) IN GENERAL.—The dollar limitation in paragraph (1) of section 44C(b) of the Internal Revenue Code of 1954 (relating to residential energy credit) shall not be reduced by any energy conservation expenditure by the taxpayer for urea-formaldehyde foam insulation or for the installation of such insulation.

(b) EFFECTIVE DATE.—Subsection (a) shall apply to taxable years ending on or after April 20, 1977.

SEC. 4. ALLOWANCE OF MEDICAL EXPENSE DEDUCTION FOR COSTS OF REMOVING UREA-FORMALDEHYDE FOAM INSULATION.

(a) IN GENERAL.—For purposes of section 213 of the Internal Revenue Code of 1954, expenses paid for medical care include expenses paid for—

(1) removal of urea-formaldehyde foam insulation from any residence of the taxpayer, and

(2) restoration of such residence which is appropriate as a result of such removal.

(b) CARRYOVER OF EXCESS DEDUCTION.—

(1) IN GENERAL.—If the amount allowable as a deduction under section 213 of such Code to the taxpayer for the taxable year solely by reason of subsection (a) exceeds the modified taxable income of such taxpayer for such year such excess shall be treated for purposes of such section as expenses for medical care paid during the succeeding taxable year and allowable as a deduction under such section for such succeeding taxable year solely by reason of subsection (a).

(2) MODIFIED TAXABLE INCOME.—For purposes of paragraph (1), the term "modified taxable income" means taxable income computed without regard to subsection (a).

(c) DENIAL OF DOUBLE BENEFIT.—No amount shall be treated as an expense under subsection (a) if (without

regard to subsection (a)) such amount is allowable as a deduction or credit under any provision of the Internal Revenue Code of 1954.

(d) EFFECTIVE DATE.—This section shall apply to expenses paid after December 31, 1981, in taxable years ending after such date.

APPENDIX B.—CONGRESSIONAL RESEARCH SERVICE MINI BRIEF, "UREA-FORMALDEHYDE FOAM INSULATION: HEALTH EFFECTS AND REGULATION," NOV. 3, 1982

UREA-FORMALDEHYDE FOAM INSULATION: HEALTH EFFECTS AND REGULATION

MINI BRIEF NUMBER MB82228

AUTHOR:

Michael M. Simpson

Science Policy Research Division

THE LIBRARY OF CONGRESS

CONGRESSIONAL RESEARCH SERVICE

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1103

ISSUE DEFINITION

Urea-formaldehyde foam insulation (UFFI), a synthetic substance which when new is an excellent thermal insulator, has been installed in hundreds of thousands of commercial and residential buildings as a means of reducing heating and cooling costs. At the present time, however, some residents of these buildings are complaining of a variety of health-related discomforts; research indicates that exposure to UFFI may have serious health effects.

Four U.S. Federal agencies and the Canadian government have taken different actions in relation to controlling potential human health effects resultant from exposure to UFFI; these actions range from use bans and compensation programs to refusal to regulate in the absence of evidence of significant risk to humans. Public policymakers' concerns currently focus on compensatory relief programs and congressional reviews of UFFI regulations and regulators.

BACKGROUND

General Information

Rising energy prices, shortages of other insulating materials, and the low cost and ease of installation of UFFI encouraged a dramatic increase in the second half of the 1970s in the number of buildings insulated with UF foam. As a way to reduce energy consumption and dependence upon foreign suppliers of energy, the U.S. Government extended thousands of tax credits to encourage the insulation of buildings; UFFI qualified as a tax creditable way to insulate a building.

Building codes in the United States rate UFFI as a combustible material; as a result, when installed inside buildings, a thermal barrier of fire-resistant material was required. Installation involved mixing and injecting under pressure, behind the thermal barrier, partially polymerized UF resin with a foaming agent and an acid catalyst. The foam hardened in minutes and cured within days. But a number of factors in this process could allow excessive formaldehyde gas from the UFFI to be emitted into the building:

excessive formaldehyde in the initial resin solution,
excessive acid catalyst in the foaming agent,
excessive foaming agent,
installation in high heat or humidity,
installation with chemicals at sub-optimal temperatures,
improper use of vapor barriers, and
installation in ceilings or other improper places.

Even when properly installed, UFFI will emit formaldehyde in decreasing quantities over time (one monitoring study found 10 to 100 times greater emission levels with newly installed UFFI relative to UFFI installed 3 to 5 years before measurement). And UFFI tends to shrink with age, reducing its value as a thermal insulator.

While formaldehyde gas in measurable amounts has been detected in homes

with UFFI, gaseous formaldehyde can also be emitted by plywood, particleboard, carpeting, draperies, gas stoves, tobacco smoke, paper products, e.g., grocery bags and tissues, wrinkle-resistant and/or water-repellent materials and clothing, and other products held together by UF resins.

Health Effects

Several studies using young, healthy adults exposed for short durations in clean and controlled atmospheres to formaldehyde gas in concentrations as small as 0.2 parts per million (ppm) have shown irritant effects of the eye, nose, and throat. Many occupational and residential studies have shown formaldehyde gas levels of 0.03 to 4.15 ppm to be associated with eye, nose, and throat irritation, nausea, vomiting, diarrhea, headaches, irritability, and skin rashes. The Committee on Toxicology of the National Academy of Sciences has reported that it found no population threshold for the acute effects of formaldehyde gas. Studies indicate that formaldehyde

can react readily with other chemicals in humans and animals;
is mutagenic in bacteria, viruses, fungi, insects, and mouse lymphoma cells with or without metabolic activitation;
induces chromosomal recombination in yeast, insects, cultured mammalian cells and rats;
induces cellular transformation in certain mouse cells;
induces cancer in rat nasal tissue; and
may be carcinogenic in other species and other tissues.

CONSUMER PRODUCT SAFETY COMMISSION

On Mar. 2, 1982, the U.S. Consumer Product Safety Commission (CPSC) proposed a regulation to ban the future installation of UFFI in non-mobile residences and schools. The proposed regulation was based upon the unreasonable risks to consumers from the irritation, sensitization, and possible carcinogenic effects of formaldehyde potentially emitted by UFFI, the availability of alternative insulating materials for nearly all applications, and the lack of alternative approaches to eliminate or adequately reduce the risks. The proposed ban was thus deemed necessary and in the public interest. It was not to apply to mobile homes (see "Department of Housing and Urban Development" hereafter) nor to offices, warehouses, stores, or similar commercial buildings (see "Occupational Safety and Health Administration" hereafter). It was also to have no effect upon UFFI already installed in buildings. The proposal included a provision for granting exemptions to any company which could demonstrate that it could consistently manufacture a UFFI product which does not pose an unreasonable risk to consumers. The CPSC published the regulation in the Federal Register (47 FR 14366) on Apr. 2, 1982. Following 10 days of judicial review, the regulation was sent on for congressional review. Congress had 90 days in which to veto or otherwise modify the rule. CPSC planned to enforce the regulation, using the authority in Sections 19 to 21 of the Consumer Product Safety Act. CPSC plans to react to consumer complaints of illegal installations by inspecting UF manufacturers' and UFFI installers' sales records, then assigning civil or criminal penalties against violators. By Apr. 23, 1982, court cases in several jurisdictions had been filed, challenging the validity of the ban, its wording, its proposed effective date, and its inapplicability to commercial building installations. Despite these, the ban became effective on Aug. 10, 1982. Under provisions of the ban, any installer of

formaldehyde-emitting UFFI is subject to a civil fine ranging from $2,000 to $500,000 per installation. Any installer knowingly and willfully continuing to install UFFI after being notified by the CPSC that he was in noncompliance with the law would be subject to criminal penalties of up to one year in jail and/or fines up to $50,000.

CPSC found that approximately 500,000 non-mobile homes in the United States are presently insulated with UFFI, or 0.59% of the total number of non-mobile homes in the United States today. Approximately 1,750,000 people presently reside in UFF-insulated homes. This is 0.80% of the U.S. population. On average then, 3.5 persons live in each UFF-insulated non-mobile home.

As of 1980, the CPSC received from residents of UFF-insulated homes one complaint of physical effects for every 200 installations, i.e., the physical health-effects complaint rate was 0.5%. Today, with 500,000 installations, assuming the health-effects complaint rate is unchanged, there could be 2,500 UFFI-installation complaints. And with 3.5 persons per installation, this means there could be 8,750 persons nationwide potentially being exposed to UFFI in their homes to the point of complaining to the CPSC. And the CPSC has not been alone in handling UFFI-related complaints. A university-based environmental health department in the Pacific Northwest monitored 244 homes and found 409 residents (158 adult males, 122 adult females, and 139 children) exhibiting at least one symptom of formaldehyde exposure. The same department handled 2080 telephone complaints in the past year. These data suggest that CPSC may have underestimated the number of people exposed to formaldehyde at a level sufficient to evoke a complaint.

According to CPSC, the average cost of a UFFI installation was $1,500. The average cost of removing the UFFI is from $6,000 to $20,000. This may include replacement of the UFFI with another type of insulation depending on the preferences of the consumer as to who performs the service. Nationally, the cost of UFFI removal could cost as much as $3 to $10 billion.

The effect of UFFI in residential walls on non-mobile home resale value is inconsistent: the resale value may be increased (due to improved thermal insulative properties), may be reduced (due to negative value of UFFI publicity and potential health effects), or may be unchanged. The Commission has estimated the possible property value reductions at $6,000 to $20,000 per house, i.e., the cost of removal of the UFFI. There does not now appear to be solid evidence from which to assess the consistent direction or magnitude of effect upon house prices due to UFFI. There are currently no national laws requiring sellers to disclose whether their houses have UFFI. But the National Association of Realtors has issued a directive to all realtor boards nationwide suggesting that: (a) the seller complete a form stating the "Yes," "No," or "Maybe" presence of UFFI, and; (b) the purchaser complete a second form acknowledging receipt of this information prior to tendering an offer to buy. Of crucial legal concern are the adherence to the real estate agents' Code of Ethics, and the implied warranty of habitability (wherein an agent must disclose information of any known health hazard).

The CPSC stated that complaints of health effects from UFFI exposure occur with installations of any age, from recent to several years prior; 1977 was a notable year for the dramatic increase in the number of UFFI installations.

CPSC estimates of the number of residential UFFI installations are as follows:

YEAR	CPSC-ESTIMATED NUMBER OF RESIDENTIAL INSTALLATIONS
1975	20,000 - 30,000
1976	41,000 - 75,000
1977	146,000 - 221,000
1978	68,000 - 125,000
1979	60,000 - 150,000
1980	25,000 - 30,000
1981	8,000 - 10,000

While the number of installations has been steadily declining, the number of health-effects complaints has been proportionately increasing.

The CPSC also stated its position that formaldehyde concentrations found in homes are sufficient, in its opinion, to cause harmful health effects. The Commission's upper value of risk was estimated to be 89 cancers developing among the estimated population of 1,750,000 persons currently exposed in 500,000 UFFI homes, using the data from actual measurements in residences. The 89 cancers represent 0.005% of the 1,750,000 persons currently exposed to UFFI in their homes, and 0.00004% of the U.S. population. The CPSC estimates the cost of avoiding one UFFI-caused cancer to be $164,000 to $292,000. The Commission pointed out that these ratios considered only the reduced risk of cancer, and did not include other health benefits and reduced medical and related costs.

Under certain conditions, certain States will take formaldehyde measurements in homes on request. Using the National Institute for Occupational Safety and Health (NIOSH) procedure are Iowa, Kentucky, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New York, Ohio, and Washington. Using the Drager system are Connecticut and Texas. The two procedures are chemically slightly different but yield similar results with comparable accuracy; some scientists maintain that the Drager system is less reliable.

Formaldehyde can be filtered out of the air, extracted onto a chemically-treated wick-bottle or gel, sealed in the walls, or vented. Costs and effectiveness of these methods were not presented in the CPSC draft regulation (see "The Canadian Situation" hereafter).

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

The U.S. Department of Housing and Urban Development (HUD) has prohibited the installation of rigid formaldehyde insulation in mobile homes since 1976 (based upon common knowledge of the fire hazard of the insulation), and it is currently considering whether a rule is needed to regulate formaldehyde in particleboard, draperies, carpeting, and other products in mobile homes (Aug. 28, 1981 Federal Register).

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

In 29 CFR 1910.1000 Table Z-2, the Federal Occupational Safety and Health Administration (OSHA) states that employees may be exposed to formaldehyde at a level of 3 ppm as an 8-hour time-weighted average (this is the Permissible

Exposure Limit, or PEL), with an acceptable ceiling concentration of 5 ppm, and that the acceptable maximum peak above the acceptable ceiling concentration for an 8-hour shift is 10 ppm for less than 30 minutes; this applies only to States administered by Federal OSHA. State-administered programs have a PEL of 2 ppm.

Some labor unions have petitioned OSHA to reduce its allowable exposure concentration, and the National Institute of Occupational Safety and Health (the research arm of OSHA) has proposed the PEL be reduced to 1 ppm, but OSHA has responded that it does not recognize sufficient evidence to warrant a tightening of the standard. Currently, an employee can file a health complaint and an OSHA inspector can respond by equipping the employee with a personal dosimeter to measure the worker's exposure to formaldehyde. OSHA has received reports of rare nasal cancers in workers exposed to formaldehyde; these reports are being investigated.

ENVIRONMENTAL PROTECTION AGENCY

On Feb. 12, 1982, the U.S. Environmental Protection Agency's (EPA) assistant administrator for pesticides and toxic substances, John A. Todhunter, announced the agency's official position on formaldehyde, saying that the chemical should not be regulated under Section 4(f) of the Toxic Substances Control Act because it does not cause "significant risks of serious or widespread harm of cancer," and that the EPA"s tentative decisions in 1980 to regulate formaldehyde were "incomplete and flawed." Despite the agency's conclusion not to regulate formaldehyde under Section 4(f) of TSCA, the EPA continued in its five-step workplan for evaluating formaldehyde. The workplan schedule began Jan. 4, 1982, and was planned to take 8 months to complete. The first step was almost complete as of Feb. 12, 1982. The entire study was to include evaluations of the applicability of animal data to potential human carcinogenicity, human exposure levels and resultant risks, coordinated interagency and outside group data-gathering, and outside peer review of hazard, exposure and risk data. On Apr. 30, 1982, EPA Pesticides and Toxics Assessment Division Director Joseph Merenda said that a major revision of the schedule was to be announced when ready; a date was not given at that time.

On May 18-19, 1982, the House Subcommittee on Commerce, Consumer and Monetary Affairs of the House Government Operations Committee held hearings on the effects of exposure to formaldehyde, with emphasis on formaldehyde emissions from UFFI. On May 20, 1982, the House Subcommittee on Investigations and Oversight of the House Committee on Science and Technology held a hearing on the specific topic of EPA's position to not regulate formaldehyde under Section 4(f) of TSCA, and on the more general topic of EPA's current position on the level of risk and scientific certainty necessary to trigger regulatory action. In connection with these hearings, the EPA announced its negotiation with the National Center for Toxicological Research (NCTR) for further formaldehyde research using project-specific funds from EPA; the EPA signed the agreement in July 1982. EPA said NCTR will:

> Establish expert review panels in the areas of formaldehyde, toxicology, epidemiology, exposure, and risk.
>
> Establish a clearinghouse to identify ongoing

studies and to coordinate the exchange of scientific data on formaldehyde exposure and health effects studies.

Develop coordinated data bases of reviewed and validated scientific knowledge in the areas of each of the panels listed above, to be supplemented by new data as they are developed through various ongoing studies.

Hold an international consensus building workshop in which the panels and other scientists will discuss the available data, reach conclusions as to their interpretation, and identify any remaining gaps requiring further research.

Complete and submit for publication a peer-reviewed report of the workshop's conclusions concerning formaldehyde health risks.

EPA said the NCTR program will be "supplemented by a limited number of additional Office of Toxic Substances projects aimed at supporting the efforts of the expert review panels or at filling certain data gaps; the specific nature of those activities will be defined as the panels are established and begin reviewing the available data bases." EPA at that time did not say if discussions to be held in connection with the NCTR project would be open to the public or other scientists. Coordinating the EPA-NCTR project is an Executive Panel composed of 2 representatives each from industry, academe, government, and public interest groups. The first meeting of the Panel was held on Oct. 29-30, 1982; discussion included the desirability and workability of opening meetings to the public. The Panel concluded that public input is needed and will be sought via announcements in the Federal Register (the first of which will appear around mid-December 1982), and in relevant journals (one possibility is advertising in "Science" magazine). The Panel also planned to hold consensus workshops, focusing entirely upon the scientific (and not the policy) issues relating to formaldehyde from approximately June through October 1983.

THE CANADIAN SITUATION

The use of UFFI in residences was banned in Canada in December of 1980, as the result of tremendous public pressure in response to media coverage of the potential health effects of UFFI. The Canadian Mortgage and Housing Commission (CMHC) in Toronto has a three-part UFFI response program in operation. Part I is an information campaign. Part II is an on-site formaldehyde measurement procedure. A resident can, without charge, borrow a dosimeter to measure formaldehyde levels in his home. If the levels approximate the Canadian recommended standard of 0.1 ppm, or for any other reason, the resident can, for $100, have a measurement performed by a government-approved professional, using the same dosimeter, supplemented with the Drager formaldehyde measuring system. And if the tests demonstrate

formaldehyde levels exceeding 0.1 ppm, the resident can get relief under Part III of the program, and receive up to $5,000 from the government for remedial work, in the sequence of: a) air filtration methods; b) air-to-air heat exchanger ventilation methods; c) sealing of the insulation (including an innovative procedure involving the injection into the walls of a substance resembling automotive undercoating, at the cost of about $2,000 to $4,000 per house); and as the last step, d) removal. Removal may not be a very effective method for reducing formaldehyde levels for several reasons: residues may remain which can continue to emit formaldehyde; in attempting to remove the UFFI, the insulation is subjected to shocks and vibrations which can agitate the insulation and exacerbate the emission of formaldehyde; and removal of the UFFI does nothing to reduce the levels of formaldehyde arising from non-UFFI sources such as particleboard, carpeting and draperies. The CMHC tested 2,400 homes in autumn for formaldehyde levels, with 2,000 homes having UFFI, and 400 homes lacking UFFI. Of the 400 without UFFI, 11 (around 3%) had formaldehyde levels exceeding 0.1 ppm. Of the 2,000 with UFFI, 198 (9.9%) had levels exceeding the 0.1 ppm standard. From this data, the CMHC estimates that about 8,000 houses (10% of the housing stock) in Canada will require some remedial work.

The first two parts of the response program have been largely completed. The first grants were distributed in the summer of 1982; the grants phase of the response program is currently set to expire in December 1983.

POINTS FOR FURTHER CONSIDERATION

Public policymakers' concerns currently focus on 1) the question of need for and the mechanics in establishing Federal programs to compensate those persons suffering adverse health effects from exposure to UFFI in their homes; 2) the question of need for and the mechanics in establishing Federal programs to compensate those homeowners whose property values may be adversely affected by having UFFI; and 3) legislative oversight of those Federal agencies whose responsibilities include the assessing of risk, setting of standards, and enforcement of regulations relating to UFFI. It is presently a matter of controversy as to whether the actions taken by the various Federal agencies are premature, inadequate, unnecessarily restrictive or intrusive, or scientifically defensible.

The House Small Business Committee held hearings on the topic of UFFI on Aug. 4, 1982. H.R. 6389, 6390, 6391, 6437 and 6524 and S. 2763 are current bills aimed at providing financial assistance to homeowners for removal of the UFFI.

APPENDIX C.—ADDITIONAL MATERIAL SUBMITTED FOR THE RECORD BY HON. SILVIO O. CONTE

EXHIBIT 1

COMMITTEE ON APPROPRIATIONS
RANKING MINORITY MEMBER
[illegible]
INTERIOR
LABOR-HEW
LEGISLATIVE
EX OFFICIO MEMBER
OF ALL SUBCOMMITTEES

COMMITTEE ON SMALL BUSINESS
SUBCOMMITTEE ON ENERGY, ENVIRONMENT, SAFETY, AND RESEARCH

MIGRATORY BIRD CONSERVATION COMMISSION

BOARD OF REGENTS
SMITHSONIAN INSTITUTION

Congress of the United States
House of Representatives
Washington, D.C. 20515

PHONE: 202-225-5335

DISTRICT OFFICES:
FEDERAL BUILDING
78 CENTER STREET ANNEX
PITTSFIELD, MASSACHUSETTS 01201
PHONE 413-442-0946

200 HIGH STREET
CENTURY PLAZA II
HOLYOKE, MASSACHUSETTS 01040
PHONE 413-532-7010

April 2, 1982

Mr. Frederick A. Ruth
Director, Congressional Relations
US Consumer Product Safety Commission
1111 18th Street, N.W.
Washington, D.C. 20257

Dear Mr. Ruth:

This is to acknowledge and thank the Commission for the information it has sent thusfar on urea-formaldehyde foam insulation (UF foam). It is a problem that I am deeply concerned about, and I would appreciate your addressing a number of follow-up questions:

1/ Is the Consumer Product Safety Commission or any other federal agency to your knowledge looking into options available at the federal level for providing relief with respect to homes already insulated with UF foam?

2/ In particular, is the CPSC or any other agency looking into what means are available for residents to test the level of formaldehyde off-gassing in these homes?

3/ What kinds of apparatus or instruments are available for such testing?

4/ How accurate is the equipment?

5/ Is the rate of off-gassing dependent upon temperature or humidity? Is it higher in hot or cold weather?

6/ Evidently off-gassing decreases over time. Is there any firm data concerning the rate at which off-gassing decreases from year to year?

7/ Are the effects of formaldehyde more severe on any particular age group such as the old or the young?

8/ What steps should a person take if he or she feels that he or she may be suffering from adverse health effects due to UF foam?

9/ Could you make available to me as soon as possible the information cited in your materials published by the National Research Council of Canada?

COMMENTS:
PARA:
CATS: 1102
AUTH:
DOC# 21+082
REC# 615022
DATE:

10/ Is there any plan for the CPSC to print that material and make it more readily available here in the United States?

11/ Would you make available to me the executive summaries for the sets of briefing materials prepared by the staff for the Commissioners?

I would very much appreciate it if you would treat this request as expeditiously as possible.

Thank you for your attention to this matter.

With best regards, I am,

Cordially yours,

Silvio O. Conte
Member of Congress

SOC/jmk

EXHIBIT 2

U.S. CONSUMER PRODUCT SAFETY COMMISSION

WASHINGTON, D.C. 20207

22 JUL 1982

The Honorable Silvio O. Conte
House of Representatives
Washington, D.C. 20515

Dear Representative Conte:

Thank you for your letter of April 2, 1982, concerning specific questions on urea-formaldehyde foam insulation. I apologize for the delay in response.

I have been in contact with our Office of Program Management and members of our Health Sciences and Engineering staffs, and they have provided the following answers to your queries:

Q: Is the Consumer Product Safety Commission or any other federal agency to your knowledge looking into options available at the federal level for providing relief with respect to homes already insulated with UF foam?

A: The Commission staff is developing options for possible federal level relief with respect to homes already insulated with UFFI. The options are in the formulation stage and will be brought to the Commission for its consideration in mid-August.

We are not aware of other federal agencies which are looking into such options with one exception. We understand the U.S. Navy is considering the removal of UFFI which was installed in certain housing units occupied by military personnel and/or their dependents. Other military services may be considering similar actions.

Q. In particular, is the CPSC or any other agency looking into what means are available for residents to test the level of formaldehyde off-gassing in these homes?

A: Some state or local health agencies offer formaldehyde testing services under a variety of conditions and fee schedules. Some agencies require evidence that illness has occurred and some may charge a fee for their services. For example, the state of Michigan charges $50.00.

Laboratories are listed in the Yellow Pages and consumers can request their services directly. Fees vary, and depend on number of locations within the home to be measured, distance of the home from the laboratory, and the type of written report desired.

Monitoring devices are also being marketed by some chemical companies.

Q. What kinds of apparatus or instruments are available for such testing?

A. There are two basic types of methods used to measure formaldehyde in air. The first of these relies upon collecting samples in an aqueous medium and testing this medium for formaldehyde. This method is exemplified by the NIOSH (National Institute for Occupational Safety and Health) chromotropic acid method which uses water or 1% sodium bisulfite as the collection medium. Air is drawn through the collection medium using a pump and is subsequently analyzed for formaldehyde using chromotropic acid. In this test sodium bisulfite is preferred because it is more efficient in absorbing formaldehyde from air and prevents loss of formaldehyde during shipment and storage of the samples prior to analysis. This method is capable of detecting levels as low as 40 to 60 parts per billion.

The other example of this first type of test procedure, developed by Lawrence Berkley Laboratories (LBL), also uses pumps to draw air through water-filled impingers, and uses pararosaniline for determining the amount of formaldehyde collected rather than chromotropic acid. During the developmental stage, LBL determined that formaldehyde loss during storage could be substantially reduced by keeping the samples stored under refrigerated conditions. The LBL procedure is capable of measuring formaldehyde levels as low as from 15-30 parts per billion.

The second basic type of method is a more recent development and does not use mechanical pumps or liquid-filled impingers for collecting formaldehyde from the air. Instead, it uses what are popularly

called passive monitors or passive dosimeters. These devices rely upon the diffusion of formaldehyde molecules through membranes or short air paths to an absorbing medium. The available passive dosimeters (3M, DuPont, Lawrence Berkley Laboratories, Oak Ridge National Laboratory) are exposed and returned to the laboratory for analysis. The cost is considerably less than that of the procedures that use a pump to collect samples since no operator need be present.

Q. How accurate is the equipment?

A. The accuracy of the methods of analysis has been under discussion. Generally, under controlled laboratory conditions, the mechanical pump-impinger systems appear to be accurate to at least $\pm$ 25% of the amount theoretically collected. The major drawback is the stability of the formaldehyde in solution during shipping from a field location to the laboratory. Since this can result in a loss of formaldehyde, results could be lower than actually present.

A comparison by CPSC of the LBL procedure with the NIOSH procedure (water collection) has shown that, at least in the thirteen homes surveyed, the two procedures correlate very well. The accuracy of new technology passive dosimeters has not been definitively established in a home or simulated home environment. Validation reports submitted by manufacturers indicate good agreement between the passive device and the NIOSH technique under laboratory conditions simulating an industrial environment. That is, air flow over the passive devices was high. In the home with the badge stationary, air flow may be insufficient for proper operation.

Currently, CPSC is determining if, under an existing Inter-agency Agreement with Oak Ridge National Laboratory, an evaluation of the commercial passive dosimeters can be performed in the home.

Q. Is the rate of off-gassing dependent upon temperature or humidity? Is it higher in hot or cold weather?

A. The rate of off-gassing changes with both temperature and humidity. Our CPSC laboratory tests indicate that the static measured formaldehyde values were much higher at 40 degrees C (104 degrees F) than they were at ordinary laboratory temperatures, 23 degrees C (73.4 degrees F). In fact, the static measured values of formaldehyde at 40 degrees C were 13 times higher on the average of eight panels than at 23 degrees C. Both temperature tests were conducted with 50% relative humidity. UFFI undergoes hydrolysis with water and liberates formaldehyde gas but CPSC does not have laboratory data with a variable humidity rate. Humidity levels are important during the heating season because water can condense in the exterior foamed walls and cause UFFI hydrolysis to take place. CPSC has no quantitative values or measurements, but the effect of condensation has been reported by the Forest Products Laboratory, Department of Agriculture, Madison, Wisconsin.

Q. Evidently off-gassing decreases over time. Is there any firm data concerning the rate at which off-gassing decreases from year to year?

A. CPSC has analyzed data on formaldehyde levels from over 1100 homes insulated with UFFI. The data collected was grouped in ten week intervals and the average formaldehyde levels within each interval was determined. The average formaldehyde levels determined are plotted against the age of the foam. The levels of formaldehyde decrease rapidly over the first 40 weeks, after which they decrease more slowly. After several years the level approaches the background levels in non-UFFI homes (0.03 ppm). Immediately after UFFI installation, the average formaldehyde levels are approximately 0.2 - 0.3 ppm. These levels decrease to approximately 0.11 ppm after one year to 0.07 ppm after three years, approaching background levels after four or five years.

The same rapid initial decline followed by a more gradual decrease has also been observed in a study conducted by the Franklin Research Institute Laboratory, the Oak Ridge National Laboratory and the CPSC laboratory. In this study, panels resembling the exterior and interior walls of a home were constructed, and UFFI was foamed into the cavity under conditions of "best available technology." The amount of formaldehyde released into the part of the panel simulating the interior of a home decreased in the same manner as the above study.

Finally, in addition to the age of the foam, the formaldehyde levels in UFFI homes can have striking variations depending on factors such as temperature, humidity, and ventilation rates at time of measurement.

Q. Are the effects of formaldehyde exposure more severe on any particular age group such as the old or the young?

A. Infants, small children and the elderly may be at a higher risk of adverse health effects from formaldehyde exposure. This is due in part to the fact that these groups spend more time indoors, and therefore are at a higher risk of experiencing formaldehyde related health problems. Also, the elderly are likely to suffer from various lung diseases, such as emphysema, which make them more sensitive to formaldehyde exposure.

Q. What steps should a person take if he or she feels that he/she may be suffering from adverse health effects due to UFFI?

A. People feeling that they are experiencing adverse health effects due to formaldehyde emitted from UFFI should contact a physician and also have formaldehyde levels measured in their homes at the time they are experiencing symptoms. Depending on the physician's recommendation, the consumer may try some minor remedial measures to reduce formaldehyde emissions. The CPSC staff has prepared a booklet of questions and answers which describes some remedies available to the consumer.

12-485 O - 83 - 6

I am enclosing a copy of this booklet for your information. If these remedial measures do not relieve the health problems, the consumer may then try some more drastic measures such as construction to provide a vapor barrier before taking the ultimate step of permanently moving out of the home (the latter if the physician feels it is necessary and after all efforts to reduce formaldehyde emissions to a level where the health problems are abated).

Q. Is there any plan for the CPSC to print the material published by the National Research Council of Canada?

A. Currently the CPSC has no plans to print the Canadian booklet. However, the booklet is available to U.S. residents upon request. An address and phone number are provided at the back of the booklet. I have enclosed a copy of this publication at your request.

I have also enclosed a copy of the executive summary contained in the staff briefing package which led to the final ban of UFFI. I hope this information has been helpful. Please let me know if I may be of assistance to you in the future.

Sincerely,

Anne C. Walker

Anne C. Walker
Deputy Director
Office of Congressional Relations

Enclosures

U.S. CONSUMER PRODUCT SAFETY COMMISSION
WASHINGTON, D.C. 20207

QUESTIONS AND ANSWERS ON UREA-FORMALDEHYDE FOAM INSULATION

In February, 1982, the U.S. Consumer Product Safety Commission voted to ban urea-formaldehyde foam insulation (UFFI) as a hazardous consumer product. The agency determined that UFFI presents an unreasonable risk of injury to consumers because of the risk of acute and chronic illness from the formaldehyde gas released by the foam insulation, and because it is not possible to predict, prior to the installation, the amount of formaldehyde that will be released from the product. However, in many homes there is a low level of offgassing of formaldehyde; therefore, the risk of injury to people living in these homes is reduced. The ban is not expected to become effective before August 1, 1982.

1. Q. What is urea-formaldehyde foam insulatic ?

A. UFFI is manufactured at the job site by the installer. Urea-formaldehyde based resin, a foaming agent, and compressed gas are fed into foaming equipment to form a product which has the consistency of shaving cream. In retrofit applications, the foam is pumped through a hose and forced into the wall cavity, where it cures and becomes firm. During and after the installation process, formaldehyde gas can be released into the living quarters and inhaled by the occupants.

2. Q. What is the health hazard associated with UFFI?

A. Inhaling formaldehyde vapors from UFFI has caused some persons to experience symptoms such as eye, nose, and throat irritation...persistent cough...respiratory distress...skin irritation...nausea, headaches, and dizziness. The severity of these illnesses varies from short-term discomfort to serious impairment. Some persons have been hospitalized, primarily for respiratory problems. In some cases, chronic respiratory problems (such as asthma) have resulted from exposure to formaldehyde gas, and existing respiratory illnesses have been made worse by the exposure. Under test conditions, formaldehyde inhalation has caused cancer in laboratory animals, and formaldehyde exposure in the home poses a cancer risk to humans.

3. Q. What is the risk of cancer from formaldehyde emitted by UFFI?

A. The cancer risk for any one individual is low. The Commission's decision to ban UFFI was based on all adverse health effects, acute as well as chronic, including that of cancer. The upper estimate of cancer risk from living in an average UFFI home for 9 years after the UFFI installation is about 1 in 20,000. Even though the cancer risk from all UFFI installations is significant, the risk to the residents of each home is low and would vary depending on the formaldehyde levels in that home and the length of time of exposure. In a large number of homes insulated with UFFI, the levels of formaldehyde may be much less than in others, and the cancer risk will be lower. In addition, as the foam ages, it generally emits less and less formaldehyde, and therefore, the additional risk from older installations would be even lower.

4. Q. Is UFFI found in most American homes?

A. No. Estimates place the number of UFFI-insulated homes at about 500,000; most of them were insulated after the early 1970's.

5. Q. How can you tell if there is UFFI in the walls?

A. If you purchased your home prior to 1970 and have not added insulation, you probably don't have UFFI. If it is a newer home, check with the builder or contact the realtor and/or seller. Ask if foam insulation was ever installed in the walls of the house. If you had insulation added, check with the insulation installer, or read the contract or bill of sale.

6. Q. Under what circumstances should you consider having your home or apartment checked for formaldehyde levels?

A. If you are not experiencing any acute health effects, and the foam was installed more than a year ago, it is likely that the formaldehyde levels and the health risks, including those of cancer, are now greatly reduced. If you have experienced the health symptoms previously described, and your physician needs to have the information for diagnosis, you may want to have a test made to determine the concentration of formaldehyde gas. You might consider the test if you are concerned about the sale of your home which has UFFI, and you wish to demonstrate to a prospective buyer what the formaldehyde level of the home is.

7. Q. If your home has UFFI, how can you tell how much formaldehyde vapor is present in the air of the house?

A. Some city, county and state health departments conduct tests at no cost to residents, while others charge a modest fee. In the absence of these sources, you might consider contracting with a commercial laboratory to determine the concentrations of formaldehyde in the air; look in

the Yellow Pages under "laboratories" for the names of companies that perform this service. It should be noted that the formaldehyde level in a home is subject to a great deal of variation because the release of formaldehyde from foam insulation is affected by temperature, humidity, and other factors. The preferred method for testing is the chromotropic acid method recommended by the National Institute of Occupational Safety and Health.

8. Q. At what level of formaldehyde in the home should one be concerned?

A. It is not possible to define a level of formaldehyde at which everybody in the population can be assured that he or she will not suffer adverse health effects. The available data indicate that somewhat less than 20 percent of healthy adults may react to formaldehyde at less than 0.25 parts per million. People vary in their susceptibility to formaldehyde, and therefore, any reaction and its severity will differ among people exposed to the same level of formaldehyde. Infants, allergic individuals, those with respiratory problems, and the elderly may respond more severely, or at lower levels.

In general, although the data are not conclusive, healthy adults may not experience acute toxic effects from formaldehyde exposure below 0.1 parts per million. We have, however, received a number of complaints from homeowners who experienced adverse health effects and who reported measurements below 0.1 parts per million. Therefore, if you experience symptoms that you feel may be related to exposure to formaldehyde, regardless of the measured levels, you should consult your physician. Formaldehyde appears to be a weak carcinogen at low doses based on tests in animals. Although data on human beings are still being gathered, in general, as the level of formaldehyde and the time of exposure decrease, so does the possible risk of cancer. Most homes emit the greatest amount of formaldehyde within the first year after installation. As a result, any cancer risk drops off substantially after that time.

9. Q. How long does UFFI continue to release formaldehyde gas?

A. Measurements in homes indicate that formaldehyde off-gassing from UFFI continues for years. The levels are usually higher during the initial weeks after installation, and taper off gradually; after the first year, the levels have generally decreased dramatically. However, higher temperatures and humidity can increase the formaldehyde off-gassing rate. In laboratory experiments, formaldehyde off-gassing has continued for at least 16 months.

10. Q. Has any urea-formaldehyde foam insulation been exempted from the ban?

A. No. The installation of any type of UFFI in residences and schools will be prohibited beginning at the time the ban becomes effective. However, the Commission may grant exemptions in the

future where a particular product can be shown not to present an unreasonable risk of adverse health effects. The ban is not expected to become effective before August 1, 1982. Consumers can call the CPSC HOTLINE to determine the effective date and to find out if the Commission has exempted any products from the ban.

Continental U.S. ---------- 800-638-8326

Maryland Residents Only ---------- 800-492-8363

Alaska, Hawaii, Puerto Rico, and the Virgin Islands ---------- 800-638-8333

Tele Typewriter (TTY) lines are available for consumers who have TTYs:

National (including Alaska, Hawaii) ---------- 800-638-8270

Maryland Residents only ---------- 800-492-8104

11. Q. If your home has been insulated with UFFI, but you have not experienced any adverse health effects from the formaldehyde vapors, what should you do?

A. If you have not experienced any adverse health effects from the foam insulation, it may well be that the formaldehyde vapors are not entering the house in excessive amounts and, therefore, may not be a serious problem. In addition, formaldehyde gas emitted by UFFI decreases as the foam gets older. You may have concern if you or someone in the home shows symptoms of formaldehyde exposure, i.e., eye, nose and throat irritation...coughing...shortness of breath...skin irritation... nausea, headaches and dizziness. If anyone experiences any of these symptoms for prolonged periods (more than a few days), but the symptoms abate when the person is away from home, the problem could be related to the insulation. In that case, see your family physician and follow the doctor's recommendations.

12. Q. Your home was insulated with UFFI, and some members of the family have experienced the adverse health effects associated with formaldehyde vapors. Your doctor has recommended your leaving the house, but this cannot be done. What options do you have now that UFFI has been the subject of a CPSC ban?

A. First, you should try to follow your physician's advice. Secondly, you should increase ventilation by opening windows when the weather permits. Thirdly, you should contact the installer who foamed your house as well as the company which provided the chemicals to the installer. You should ask what corrective action the company and installer are prepared to take to relieve the off-gassing problem. If industry representatives do not assist you, you may want to take some

corrective actions on your own to minimize the off-gassing of formaldehyde into the house. You may also wish to seek assistance from your local government consumer affairs office, if necessary.

13. Q. What corrective actions can you take?

A. Up to now, the U.S. government has not tested the remedies, but the National Research Council of Canada (NRC) has recommended some techniques that offer some relief for UFFI homes. The NRC suggests you check the walls; they should be sealed to prevent infiltration of formaldehyde containing air. Some of the steps which may be taken include: 1) all holes, cracks or gaps in the wall finish may be repaired by caulking or spackling compounds; 2) two coats of a vapor-barrier paint may be applied to the walls; 3) mylar or vinyl wallpaper may be installed over the wall to reduce the flow of formaldehyde from the UFFI wall cavity. Special vinyl wallpaper paste and a good grade of canvas backed vinyl wallpaper should be used. Both the paint and the vinyl wallpaper will provide plastic barriers to reduce the penetration of moisture into the foamed wall.

14. Q. Is painting and wallpapering enough to reduce the flow of formaldehyde into the house?

A. Not necessarily. Two other areas may need to be closed off to keep formaldehyde gas from entering the living space of the house. For example, electrical outlets may be filled in with UFFI, even if the insulation were properly installed. An inexpensive non-flammable gasket available at hardware stores may be installed under the cover plate to retard the flow of air and formaldehyde vapors into the room. More important, however, is the junction of the wall and the floor where air can leak into the room. Here, the use of caulking cartridges containing butyl or acrylic latex sealants, weather-stripping, or special foam-backed tapes have reportedly been used. However, CPSC has no data on which to judge the effectiveness of these measures.

15. Q. What steps could be taken if the wall is covered with paneling, plywood or another wood product?

A. You should seal the joints to prevent the entry of vapors into the house, and coat the wood paneling, etc., with a sealant such as varnish.

16. Q. If the UFFI must be removed from the walls because of ongoing health problems of the occupants, what costs are involved?

A. There is no single answer. Based on information obtained by the Commission, costs for complete removal of the UFFI in the walls have run from less than $5,000 to $20,000, with perhaps $6,000 as an average. The procedure calls for removal of interior or exterior wall panels or

siding, removal of the foam insulation, and installation of new insulation and wall panels or siding. Wood surfaces that came in contact with the foam should be treated with a chemical neutralizing agent such as sodium bisulfite. However, this must be done with care and may require the advice of an architect and/or consulting engineer. This process is described in detail in the publication "Building Practice Note, # 23" published by the National Research Council of Canada. The Canadian agency is making single copies available without charge to U.S. homeowners who are exploring remedial measures for the UFFI. Single copies may be obtained by writing the Publication Section, M-20, Division of Building Research, National Research Council, Montreal Road, Ottawa K1A 0R6, or by calling the Publication Section in Canada at 613-993-2463.

17. Q. Some consumers living in mobile homes have experienced similar health problems as residents of UFFI homes. Is there UFFI in mobile homes?

A. In general, mobile homes were not insulated with UFFI. Probably, the mobile homes that have UFFI were those homes where the owners contracted on their own with an installer to have foam insulation applied in the walls. If a mobile home resident did not hire someone to foam the wall, then the mobile home probably does not have UFFI.

Urea-formaldehyde resin is used in a number of wood products found in mobile homes. This means that there could be formaldehyde in the mobile home even though there is no foam insulation in the wall. If you experience symptoms, you should report the possibility of formaldehyde exposure to your physician and contact the company who sold you the mobile home. The company may be able to suggest some remedial actions that could be taken to correct the formaldehyde vapor problem in the mobile home.

EXHIBIT 3

First District, Massachusetts

COMMITTEE ON APPROPRIATIONS
Ranking Minority Member
Subcommittees:
Transportation
Labor-HEW
Legislative
Ex Officio Member
of All Subcommittees

COMMITTEE ON SMALL BUSINESS
Subcommittee on Energy, Environment, Safety, and Research

MIGRATORY BIRD CONSERVATION COMMISSION

BOARD OF REGENTS
SMITHSONIAN INSTITUTION

Congress of the United States
House of Representatives
Washington, D.C. 20515

April 5, 1982

2300 Rayburn Office Building
Washington, D.C. 20515
Phone: 202-225-5335

District Offices:
Federal Building
78 Center Street Arsenal
Pittsfield, Massachusetts 01
Phone: 413-442-0946

300 High Street
Century Plaza II
Holyoke, Massachusetts 010
Phone: 413-532-7010

Mr. Roscoe L. Egger, Jr.
Commissioner
Internal Revenue Service
1111 Constitution Avenue, N.W.
Washington, D.C. 20227

Dear Commissioner:

As a result of a vote on February 22 by the Consumer Product Safety Commission to ban the sale and installation of urea-formaldehyde (UF) foam insulation as a hazard to health, I have received many requests from the people I represent to determine what recourse is available to them.

UF insulation gained popularity at exactly the time when the sudden rise in the cost of energy caused an upsurge in residential conservation activity. As a result, many homeowners installed UF insulation and find themselves in the predicament of living in houses insulated with a product now declared to be hazardous to their health. Moreover, the cost of removing the foam is very high, $20,000 in some cases or more, because of the need to knock out the interior or exterior walls in order to remove it.

I would very much appreciate your position as to whether any provisions of the Internal Revenue Code are applicable to allow homeowners to deduct the cost of removing the UF insulation and of installing a safer kind of insulation. Two provisions that might be relevant are the deduction for medical expenses and the deduction for casualty losses. Of course, discussion of any other applicable provision would be greatly appreciated.

Because of the seriousness of this issue and the need to provide an answer as to possible avenues of relief to the affected parties, I would ask that this request be treated as expeditiously as possible.

With appreciation for your attention to this request and with my best regards, I am,

Cordially yours,

[signature]

Silvio O. Conte
Member of Congress

SOC/jmk

EXHIBIT 4

Internal Revenue Service

Department of the Treasury

Washington, DC 20224

The Honorable Silvio O. Conte
House of Representatives
Washington, DC 20515

Person to Contact:
Robert J. Brann

Telephone Number:
566-4472

Refer Reply to:
PM:S:FP:T

Date:
MAY 1 / 198X

Dear Mr. Conte:

We are replying to your April 5 letter to the Commissioner concerning the deductibility of expenditures for the removal of urea-formaldehyde (UF) foam insulation.

There is no provision of federal tax law that specifically allows a deduction for the expense of removing UF insulation and replacing it with a safer insulation. Moreover, the Service has no published position on whether such an expense would be deductible as a medical expense or as a casualty loss. However, the following general information may be helpful.

Section 262 of the Internal Revenue Code expressly prohibits the allowance of a deduction for personal, living, or family expenses, except as otherwise provided in some other section of the Code.

Section 165(c) of the Code provides, in part, for a deduction for losses of property sustained by an individual during the tax year, if such losses arise from casualty or theft. A casualty is the complete or partial destruction or loss of property resulting from an identifiable event that is damaging to property, and is sudden, unexpected, or unusual in nature. Casualty losses are generally deductible only in the tax year in which the casualty occurred. Information on the casualty loss deduction is provided in our enclosed Publication 547.

Section 213 of the Code provides a limited deduction for amounts paid, and not compensated for by insurance or otherwise, for medical care of the taxpayer and the taxpayer's spouse and dependents. Section 213(e) defines the term "medical care" as amounts paid for the diagnosis, cure, mitigation, treatment, or prevention of disease, or for the purpose of affecting any structure or function of the body (or for transportation primarily for and essential to medical care, or for insurance covering medical care). Section 1.213-1(e)(1)(ii) of the Income Tax Regulations provides that deductions for expenditures for medical care allowable under section 213 will be confined strictly to expenses incurred primarily for the prevention or alleviation of a physical or mental defect or illness. Our enclosed Publication 502 contains additional general information about deductible medical expenses.

Although not on point, we thought you might find the enclosed copy of Revenue Ruling 79-66 of interest. The ruling explains the Service's position on the deductibility of the costs of removing lead-based paint from the surfaces of a residence.

We are also enclosing a copy of Revenue Procedure 80-20. Should one of your constituents want to request a ruling, he or she should follow the procedures explained in Section 9.

We hope our letter and enclosures are helpful. If we may be of further service, please let us know.

Sincerely yours,

Robert J Brann

Chief,
Technical Services Branch

Section 213.—Medical, Dental, Etc., Expenses

26 CFR 1.213-1: Medical, dental, etc., expenses.

Medical expenses; lead poisoning; removal of lead-based paint. Amounts paid pursuant to a doctor's recommendation for the removal of lead-based paint from any surfaces in a house that are in poor repair or readily accessible to the owner's dependent child suffering from lead poisoning are deductible as medical expenses. Amounts paid for the covering of lead-based paint with plaster, wallboard, or paneling, are deductible as medical expenses to the extent such amounts exceed the increase in the value of the house. However, the cost of painting the scraped surfaces and the new wall surfaces, together with the cost of removing the lead-based paint not readily accessible to the child or not in poor repair are not deductible.

Rev. Rul. 79-66

ISSUE

Are amounts paid by a taxpayer for the removal or elimination of lead-based paint from the surfaces of the taxpayer's personal residence deductible as expenses for medical care under section 213 of the Internal Revenue Code of 1954?

FACTS

The taxpayer and immediate family acquired and have been occupying an old frame house as their personal residence. The taxpayer has a dependent child, age 3, living in the house. After several months of occupancy, the child became ill and was diagnosed by a physician as having lead poisoning. The child was immediately put on a program of detoxification. In addition, as a necessary part of the child's treatment, the physician recommended that taxpayer's house be tested by local health officials to determine if the surfaces had a high level of lead.

Upon the taxpayer's request, a city health department employee tested the painted surfaces in the taxpayer's personal residence using a portable x-ray fluorescence analyzer (XRF). The test revealed that the paint on such surfaces contained a high level of lead.

The doctor recommended, and the local health authorities required, that the lead-based paint be removed from any painted surfaces in the house that were readily accessible or reachable by the child (for example, within four feet of the floor) or any painted surfaces that were in poor repair (cracking, chipping, loose, or peeling paint that is likely to fall) by scraping or by covering with plaster, wallboard, or paneling.

The taxpayer paid a contractor to refinish those hazardous surfaces of the residence that were readily accessible or reachable by the child or that were in poor repair. The woodwork and wood surfaces were scraped to remove the lead-based paint and then all woodwork and wood surfaces were repainted with a non-lead paint. The walls were covered with wallboard or plywood paneling and the new wallboard surfaces were painted with non-leaded paint. The taxpayer would not have refinished any of the hazardous surfaces in the residence, but for the recommendation of the physician and the requirement of the local health department.

LAW AND ANALYSIS

Section 262 provides that no deduction shall be allowed for personal, liv-

ing, or family expenses, except as otherwise expressly provided in the Code.

Section 213(a) establishes an exception to the general rule of section 262. Section 213(a) provides, in part, for a deduction for the amounts paid during the taxable year for medical care of the taxpayer, the taxpayer's spouse, and the taxpayer's dependents (as defined in section 152) that exceed 3 percent of the adjusted gross income.

"Medical care" is defined by section 213(e)(1)(A), in part, as the amount paid for the diagnosis, cure, mitigation, treatment, or prevention of disease. Section 1.213-1(e)(1)(ii) of the Income Tax Regulations further defines medical care, in part, as follows:

> * * * Deductions for expenditures for medical care allowable under section 213 will be confined strictly to expenses incurred primarily for the prevention or alleviation of a physical or mental defect or illness. * * * However, an expenditure which is merely beneficial to the general health of an individual, such as an expenditure for a vacation, is not an expenditure for medical care.

Section 263 of the Code generally provides that capital expenditures are not deductible for federal income tax purposes. However, an expenditure that otherwise qualifies as a medical expense under section 213 is deductible, even though a capital expenditure for permanent improvement or betterment of property, to the extent that the expenditure exceeds the increase in the value of the related property. Section 1.213-1(e)(1)(iii) of the regulations.

In *Stringham v. Commissioner*, 12 T.C. 580 (1949), *acq.*, 1950-2 C.B. 4, *aff'd per curiam*, 183 F.2d 579 (6th Cir. 1950), the Tax Court discussed the requirements for claiming a deduction for medical expenses stating:

> The Congressional intent is sufficiently evident to require the showing of the present existence or the imminent probability of a disease, physical or mental defect, or illness as the initial step in qualifying an expenditure as a medical expense.

The Tax Court, in *Daniels v. Commissioner*, 41 T.C. 324 (1963), concluded that taxpayers could not deduct as an expense for medical care the cost of a fallout shelter constructed to protect the taxpayers against sickness from fallout radiation since an imminent probability of disease did not exist.

The disease of lead poisoning, its mitigation, its cure, and its prevention have been the subject of national concern. See Hearings on S. 3216 (Lead-Based Paint Poisoning) Before the Subcomm. on Health of the Senate Comm. on Labor and Public Welfare, 91st Cong., 2d Sess. (1970); the Lead-Based Paint Poisoning Prevention Act, 42 U.S.C. section 4801 (1974); and a statement entitled *Preventing Lead Poisoning in Young Children*, released by the Center for Disease Control, U.S. Department of Health, Education and Welfare, in April 1978. The disease is particularly prevalent in children under the age of six because of the medically recognized fact that some young children habitually eat non-food substances such as lead-based paint chips. There is a particularly acute hazard when the child has, or has had, lead poisoning or undue lead absorption because of the chronic, recurring nature of the disease when the child is reintroduced into the hazardous environment.

The circumstances of (1) a young (under the age of six) child having, or having had, lead poisoning or undue lead absorption, as certified by a medical doctor, and (2) the child currently living in taxpayer's residence that contains a hazardous environment of high level lead-based paint surfaces, as certified by local health authorities, satisfy the present existence or imminent probability of disease standard considered in *Stringham* and *Daniels*.

Therefore, the expenses incurred by the taxpayer for the elimination of high level lead-based paint from the surfaces of the taxpayer's residence that were readily accessible or reachable by the child or were in poor repair are deductible as a medical care expense within the limitations of section 213 of the Code. In addition, because the installation of wallboard or paneling over surfaces that were readily accessible or reachable by the child or in poor repair is a permanent improvement, the cost of which is a capital expenditure, the cost of such an improvement is deductible as a medical expense (within the limitations of section 213) only to the extent such cost exceeds the increase in value of the taxpayer's residence attributable to such permanent improvement. Section 1.213-1(e)(1)(iii) of the regulations.

However, the cost of painting the scraped surfaces and the new wallboard surfaces is a nondeductible personal expense under section 262 of the Code. In addition, any portion of the cost of scraping or otherwise refinishing surfaces not readily accessible or reachable by the child or not in poor repair, is a nondeductible personal expense under section 262.

HOLDING

EXHIBIT 5

Management BULLETIN

ORDNANCE SYSTEMS
OF THE ELECTRONIC SYSTEMS DIVISION

NUMBER 13

June 15, 1982

SUBJECT: Purchase Denial on Foam-insulated Homes

Home Equity, inc., the housing company GE uses for home purchases in the case of transferring employees, will no longer make a bid for purchase of a home that has been insulated with Urea Formaldehyde Foam Insulation (UFFI).

Such insulations are now illegal, but many people in the past did have their homes insulated with the foam.

In such cases it may be important for the employee considering a transfer to know in advance that Home Equity will not purchase his or her home. Please advise your exempt employees who work for you when they become affected.

Information Source: J.K. Handler, Manager-Professional Relations

EXHIBIT 6

53 Morningview Drive
Pittsfield,Massachusetts 01201
July 27,1982

The Honorable Silvio Conte
2300 Rayburn Office Building
Washington, D.C. 20515

Dear Congressman Conte;

This letter is to give you some indication as to what has happened to my health since the insulation of our home with UFFI in 1977. During the winter of 1977 I began to suffer from headaches,constant nausea, aching and burning of eyes and nosebleeds. There were intervals of fainting spells. During this period of time the doctor and I thought I had a sensitivity to milk or meat and changed my diet.This did not eleviate the problem. I had various lab tests to rule out certain illnesses and yet the symptoms remained.

At one point my doctor sent me to have some neurological testing done to see why I was fainting. Nothing showed up in a neurological form of illness. Then the symptoms lessened because it was spring and my health seemed better. In the fall and during the winter the symptoms recurred and I once again felt ill most of the time.

At this time there was no real information given to the doctors or to the public about adverse effects of homes with UFFI.

During the next fall and winter the same things occured and I had a new doctor. In the meantime I had developed sun sensitivity,and they began to test me for lupus. My arthritis was worse and I still had the naussea nosebleeds and occasional fainting spell. It was at this time my doctor began to familiarize himself with problems associated with UFFI and his patients. He suggested that we leave the house to see how I felt. We were gone for three weeks and all was well. Upon my return I came down again with the afore mentioned illnesses. The fainting occured when the houses was closed up tight for a few days, the nosebleeds occured within hours of returning home. It was at this time that the doctor felt he knew why I was feeling so miserable. There are so many things that now make me ill and the explanation for this is the sensitivity from the UFFI.

JUst the fear of the possible occurance of nasal or other cancers that might occur in the next years from this off gasing of the UFFI fill us with mental anguish. The constant not feeling well make life very difficult for me. There is no safe level of Formaldehyde gass. My husband had to forgo a promotion since it would have required our moving and no real-estate person would touch our home because of UFFI.The value of our home is nil. Though the doctor suggested we move out we are unable to do so financially. Therefore,we hope and pray for your support of the ban of UFFI and the passing of bill 6391 that would help us get rid of this insulation.

Sincerely yours,
Ruth Klemperer
Ernest Klemperer

P.S. (Should you desire), I have a letter from GE/Homequity in which they state their policy of not purchasing homes with UFFI — even if the substance is removed — I could send you a copy — I had requested the information in writing.

What I would really like to see is a safety level established — for example, the Federal Register mentioned that homes that have been insulated for at least five years should not have any off-gassing problems even if they were problematical initially (we never had any apparent problems). Our home has been insulated since 1976, and I really believe in my heart it is safe, and I know the insulation has been cost effective energy-wise. I think the entire situation has been blown way out of proportion — and in the 2% of cases where there are real problems, they were due to inadequate mixing procedures. However, should our home not sell this year — i.e. if our tenants do not exercise the option to buy, we will probably have to remove the foam to make our home marketable. Any way you look at it, we have lost something, because our home if purchased under the option will sell for $52,000. — $8,000 less than its fair market value. If safety levels were established in measured years since insulation, and publicized, others would not have to go through what we have.

APPENDIX D.—ADDITIONAL MATERIAL SUBMITTED FOR THE RECORD BY HON. JOHN HILER

EXHIBIT 1

UNIVERSITIES ASSOCIATED
FOR RESEARCH AND EDUCATION IN PATHOLOGY, INC.

9650 ROCKVILLE PIKE • BETHESDA, MARYLAND 20814 • PHONE (301) 530-7130

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Robert W. Wissler, M.D., Ph.D.

February 12, 1982

The Honorable Nancy Harvey Steorts
Chairman
Consumer Product Safety Commission
1111 18th Street, N.W.
Washington, D.C. 20036

Dear Madam Chairman:

As former director of the International Agency for Research on Cancer (IARC), Lyon, France, I wish to comment on certain issues arising out of the recent reports from the Consumer Product Safety Commission and the press. My comments relate first to the interpretation of the Agency's evaluation and the second to certain generic issues.

The evaluation of formaldehyde was part of a systematic, long-term program by the agency on the evaluation of carcinogenic risks of chemicals to humans. These evaluations are compiled by groups of experts who act as advisors to the director and are selected by the agency's secretariat. The report represents the opinion of the working party and is not an official position by the IARC. If he considers it desirable, the director may require further consideration of an evaluation by another working party. When I left the agency, the second report on formaldehyde was still in draft form and I presume the comments in the press were based on the latter, even though it had not been published or finalized. However, there would appear to be no doubt that formaldehyde causes cancer in one species of rodents and this part is not disputed. Clarification is, however, necessary regarding the interpretation of the group's evaluation.

Based on the analysis of available material the group uses for its summary evaluation a formular wording which includes the phrase "for practical purposes."
This evaluation must be read in the context of the preamble of the monographs which includes a number of caveats as to the limitation of the evaluation. When the present terminology was adopted some years ago, it was assumed that it would be interpreted scientifically by national bodies giving full consideration to the caveats and not as a regulatory recommendation. In the present case, this does not seem to have been fully appreciated. The preamble states: "For many of the chemicals....for which there is sufficient evidence of carcinogenicity in animals, data relating to the carcinogenicity in humans are either insufficient or non-existent. In the

absence of adequate data on humans, it is reasonable, for practical purposes, to regard such chemicals as if they present a carcinogenic risk to humans." However, it is quite clear from the context that this was not to be interpreted without further qualifications to mean that a compound carcinogenic to animals. was to be considered a human carcinogen. In practice, the risk to humans could range from practically zero to being very considerable and the same phraseology could be used in the evaluation.

The complexities of extrapolation of potency from animals to man are briefly described in the preamble and no working party during my directorship ever stated that such an extrapolation could be made with any degree of credibility. In fact, the first sentence in the preamble states, "No adequate criteria are presently available to interpret experimental carcinogenicity data directly in terms of carcinogenic potential for humans." Possible methods of doing so are discussed in the preamble but, to date, I am unaware that any acceptable scientific method has as yet been developed for any known chemical carcinogen. Today few experienced experimental oncologists would make any attempt to extrapolate mathematically the degree of human risk from animals, although such attempts were fashionable among biostatisticians in the early '70's when the complexities inherent in modern theories of carcinogenesis in man were not appreciated. Exact estimates as to the number of cases of a cancer that might be expected to occur in man based on a single experiment are silly and simply ignore biological realities. The fact that no better methods exist does not make these estimates any better or more valuable. Thus, in the absence of human material, at no time has the agency or its workshops ever attempted to define "safety" which is in fact a mathematical probability.

The second point relates to the question of human data. In the past, the agency's monographs have tended only to discuss specific published analytical studies and avoided evaluation of circumstantial epidemiological and biological data. The latter may be considerable but requires a large degree of biological knowledge, intelligence and flexibility by very experienced epidemiologists for interpretation. Many epidemiologists, however, believe that such data should at least be taken into consideration by national bodies when making an overall evaluation as to policy. The use of such data has played a role in evaluating saccharine and DDT. Accordingly, where an evaluation of formaldehyde has been attempted, as here, it would appear advisable to give consideration to human data from other sources.

In this case, the type of cancer one might believe to be produced by formaldehyde gas is normally rare. Any marked excess should be easy to recognize in view of the large scale on which the chemical has been used for many years. Whereas proportional mortality rates from cancer are poor in terms of positive evidence of an occupational risk, because an increased proportion of a cancer may occur as a result of reduced mortality from other causes due sometimes to the "healthy worker effect", they may provide excellent evidence as to the absence of a risk if the proportion of death due to a particular type of cancer is low. It should also be pointed out that in the wood industry there have been extensive studies regarding a [illegible]crease in the risk of nasal cancer in this occupation. However, the data [illegible]s that the increase is most likely to occur among carpenters and may be associated with certain hardwoods. It has not been reported in those portions of the wood industry where

formaldehyde is most likely in general use. The extensive studies on occupational mortality in the United Kingdom, to which no reference is made in your report, only show an increase in nasal cancer in butchers and no mention is made of an increase in other occupations. It is interesting, moreover, that studies on pathologists in the United Kingdom by Doll and Peto and elsewhere also show no increase in nasal or other cancers that could be attributed to formaldehyde yet pathologists in the past were exposed extensively. All studies quoted are typical of a negative situation.

In nearly all countries, irrespective of their degree of industrial development, the incidence of nasal cancer is surprisingly constant and in a number of developed countries where formaldehyde has been widely used, the risk of nasal cancer is in fact falling. All these data taken together are insufficient to completely exclude a minimal risk, but certainly they weigh heavily against the view that formaldehyde gas constitutes any considerable risk for nasal cancer to man.

I believe that the circumstantial data above is important and raises a significant generic issue as to the value and strength of negative data. Anyway, it is my opinion that all available human observations should be used by the commissioners in evaluating the carcinogenicity of the gas.

None of the above comments should be interpreted as implying that careless use of formaldehyde compounds is desirable or that formaldehyde does not have unpleasant side effects at certain levels of exposure especially among sensitive individuals.

Sincerely yours,

John Higginson, M.D.
Senior Executive Scientist

JH:dr
cc: The Honorable R. David Pittle
The Honorable Samuel Zagoria
The Honorable Stuart Statler
The Honorable Edith Barksdale Sloan

EXHIBIT 2

AMERICAN CANCER SOCIETY, INC.
777 THIRD AVENUE • NEW YORK, N.Y. 10017 • (212) 371-2900

ALAN C. DAVIS
VICE PRESIDENT FOR
GOVERNMENTAL RELATIONS

RESEARCH
EDUCATION
SERVICE

The American Cancer Society has received numerous inquires about whether or not formaldehyde (HCHO) can cause cancer in humans. Because of this, the Society asked a panel of distinguished scientists to review available scientific data; one published study showing that HCHO can cause cancer of the nasal turbinates in rats; a letter from Dr. Arthur Upton to a group of government agency officials alerting them to observations of the animal carcinogenicity of HCHO in his laboratory; and analysis of a Chemical Industry Institute of Toxicology (CIIT) report, by the Environmental Cancer Information Unit at Mt. Sinai Hospital, New York City.

Because of this animal data--there is no evidence of carcinogenicity in humans--and in response to the numerous inquires, the Society believes it should make this information known to the public, particularly those who produce, work with, or use this important substance, and who are exposed to HCHO over lengthy and repeated periods of time.

HCHO is one of the most important and abundantly produced chemicals (several billion pounds a year in the USA alone) in American industry. Its uses include the manufacture of adhesives for granulated wood and plywood, ureafoam for household insulation, and substances for permanent press fabrics. Small amounts of HCHO are produced naturally within the body and are quickly converted to formic acid and excreted in the urine. People also may be non-occupationally exposed to indoor air contamination by breakdown substances of HCHO products.

Available laboratory data shows a dose relationship in which more animals which are exposed to the highest level of HCHO developed cancers than did those exposed to lower amounts. It is important to note that unlike most other chemical studies in animals, HCHO produces cancer in rats and mice at doses which are reasonably comparable (only 2 to 3 times higher) to those to which people may be exposed in high exposure situations.

The Society will continue to support research on the potential carcinogenicity of HCHO in people and urges other research agencies to support such studies as well. The American Cancer Society, in the public interest, will continue to monitor the scientific evidence as it becomes available. We urge regulatory agencies to do the same and to set appropriate standards to minimize occupational and public exposure to the chemical, its industrial products and applications, based on scientific evidence.

EXHIBIT 3

FDA
TALK PAPER

FOOD AND DRUG ADMINISTRATION
U.S. Department of Health and Human Services
Public Health Service 5600 Fishers Lane Rockville, Maryland 20857

FDA Talk Papers are prepared by the Office of Public Affairs to guide FDA personnel in responding with consistency and accuracy to questions from the public on subjects of current interest. Talk Papers are subject to change as more information becomes available. Talk Papers are not intended for general distribution outside FDA, but all information in them is public, and full texts are releasable upon request.

T82-40
June 17, 1982

Emil Corwin
(202) 245-1144

FORMALDEHYDE (UPDATES T80-27)

The Food and Drug Administration has received the final report of a formaldehyde inhalation study on laboratory animals.

The object of the study, reported by the Chemical Industry Institute of Toxicology, was to determine the possible adverse effects of inhaling formaldehyde vapor in various concentrations.

The study involved 720 mice and 720 rats, divided into three groups of 240 each (120 males and 120 females). Each group was exposed repeatedly for six hours per day, five days per week for two years to formaldehyde vapor in concentrations of 15, 6 or 2 parts per million. A control group of 240 mice and 240 rats was not exposed to formaldehyde vapor.

In the 15 ppm exposure group squamous cell carcinomas of the nasal cavity were observed in two mice and 103 rats. In the 6 ppm exposure group two rats developed carcinomas in the nasal area. No nasal tumors were observed at a dose of 2 ppm in mice or rats. None was found in the control group.

Due to the irritating properties of formaldehyde for humans, a single exposure to 15 ppm of formaldehyde vapor would be immediately intolerable. People would flee an area with that much vapor because of the smell and irritation. Some people may be able to tolerate a single exposure to 6 ppm for 10 minutes. A single exposure to 2 ppm would be uncomfortable and cause a person's eyes to water.

On the basis of current data, FDA has concluded that no regulatory action against the use of formaldehyde in the products it regulates is necessary at this time to protect the public health. The potential formaldehyde exposure from FDA-regulated products is very low.

Formaldehyde solution (formalin) is used in various biologicals, human and veterinary drugs and cosmetics as an inactivating agent, antibacterial agent preservative or sterilant. It also occurs as an indirect food additive liberated from packaging materials in trace amounts. Its use as a direct food additive is very limited.

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EXHIBIT 4

MAY 13 1982

Dr. J. Donald Millar
Director
National Institute for Occupational
Safety and Health
Centers for Disease Control
Atlanta, Georgia 30333

Dear Dr. Millar:

Thank you for your letter of March 30, 1982, transmitting information on the carcinogenicity of benzene, formaldehyde, and the benzidine-based azo dyes that you received from Dr. Lorenzo Tomatis, Director of the International Agency for Research on Cancer (IARC). These documents have been forwarded to our Directorate of Health Standards Programs staff and will be given consideration as part of the Agency's ongoing review of these substances.

We must express our disagreement with your interpretation of IARC's findings regarding formaldehyde. You stated in your summary that "formaldehyde must (emphasis added) be regarded as if it were carcinogenic to man on the basis of toxicological studies in animals." IARC, however, states only that "in the absence of adequate data on humans, it is reasonable, for practical purposes, to regard such chemicals as if they were carcinogenic to humans."

In order to promulgate a regulation, OSHA must not only find a substance to be carcinogenic to man but must demonstrate that the substance poses a significant risk to occupationally-exposed workers. We believe that it is impossible for OSHA to promulgate a new regulation for formaldehyde based upon the simple classification of the substance as a human carcinogen.

Sincerely,

MARK D. COWAN

Mark D. Cowan
Deputy Assistant Secretary

EXHIBIT 5

U.S. Department of Labor

Assistant Secretary for
Occupational Safety and Health
Washington, D.C. 20210

JUL 7 1982

Dr. J. Donald Millar
Director
National Institute for Occupational
Safety and Health
Centers for Disease Control
Atlanta, Georgia 30333

Dear Dr. Millar:

I appreciate the opportunity and the need to clarify the Occupational Safety and Health Administration's (OSHA) regulatory policy on carcinogens in response to your letter of June 15, 1982.

In your letter you asked whether OSHA requires evidence of cancer in humans in order to promulgate regulations to control occupational exposure to a carcinogen. The answer to your question is, of course, no. OSHA does not require carcinogenic evidence in humans to promulgate standards. OSHA may promulgate standards for carcinogenic substances when animal evidence alone is available.

The intent of my May 13 letter, however, was to indicate that OSHA cannot promulgate a regulation for a carcinogenic substance solely because the substance has been identified as a carcinogen, based either on human or animal evidence. According to the Supreme Court's decision in the benzene case, before OSHA can promulgate any permanent health standard, the Secretary of Labor is required to make a determination that a place of employment is unsafe in the sense that a significant risk to workers is present, and that this risk can be eliminated or lessened by the promulgation of a standard or a change in a standard. In that case, benzene was a proven human carcinogen based upon human evidence. Nevertheless, the Court vacated OSHA's benzene standard because OSHA did not meet its statutory burden to show that long-term exposure to benzene, at the levels encountered in the workplace, presented a significant risk of material health impairment.

Thus, it is incumbent upon OSHA to demonstrate significant risk in the promulgation of a standard. We believe that it is possible to meet this burden by evidence derived from studies of either animals or humans. Some of the factors that must be considered in making the determination of whether a risk is significant are the following: the strength of the evidence of carcinogenicity; the number of workers exposed to the substance; the levels to which the workers

are exposed; the best estimates of exposure levels associated with potential tumor induction in man or animals; and the molecular similarity to other known carcinogens. When making this determination, OSHA considers all reports, studies and other evidence and encourages all segments of the public to participate in the rulemaking proceeding.

OSHA values the opinions both of the International Agency for Research on Cancer and the National Institute for Occupational Safety and Health. Their and your expert opinions are very useful to us in our standard setting activities. As I noted above, we cannot promulgate a standard solely because there is evidence of carcinogenicity, but we must demonstrate that there is a significant risk to workers covered by the Occupational Safety and Health Act from workplace exposure to a particular substance.

OSHA looks forward to continuing exchanges with you on these issues of mutual concern as we both strive to reduce or eliminate workplace hazards. We hope to be able to work even more closely with you in the future to provide suggestions and advice to you regarding OSHA's research needs, just as you provide suggestions to us regarding our regulatory activities.

Sincerely,

Mark D. Cowan
Deputy Assistant Secretary

EXHIBIT 6

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Review of Data Available to the Administrator Concerning Formaldehyde and di(2-ethylhexyl) Phthalate (DEHP)

FROM: John A. Todhunter, Ph.D.
Assistant Administrator
for Pesticides and Toxic Substances (TS-788)

TO: Anne M. Gorsuch
The Administrator (A-100)

THRU: John W. Hernandez, Ph.D.
Deputy Administrator (A-101)

Summary

At your direction I have reviewed the materials prepared by the Office of Toxic Substances in regard to formaldehyde and DEHP. I have also reviewed the materials prepared early in 1981 by OTS which were appended to a letter from NRDC, dated September 4, 1981. This memorandum is a statement of my professional conclusions and policy recommendations regarding the documents reviewed. In summary: I find that I concur with the current recommendations of OTS that formaldehyde and DEHP ought not be considered under section 4(f) and that the preliminary drafts relied on by NRDC in their letter to you were incomplete and flawed.

Technical and Policy Issues Related to Section 4(f)

The Toxic Substances Control Act (TSCA) was enacted by Congress to protect human beings and the environment from those chemical substances and mixtures whose manufacture, processing, distribution in commerce, use, or disposal pose unreasonable risks of injury. One of the provisions of the Act is Section 4(f), which states that:

> Upon receipt of 1) any test data required to be submitted under this Act, or 2) any other information available to the Administrator, which indicates to the Administrator that there may be a reasonable basis to conclude that a chemical substance or mixture presents or will present a significant

> risk of serious or widespread harm to human beings from cancer, gene mutations, or birth defects, the Administrator shall, within the 180-day period beginning on the date of the receipt of such data or information, initiate appropriate action under section 5, 6, or 7 to prevent or reduce to a sufficient extent such risk or publish in the FEDERAL REGISTER a finding that such risk is not unreasonable. For good cause shown the Administrator may extend such period for an additional period of not more than 90 days. The Administrator shall publish in the FEDERAL REGISTER notice of any such extension and the reasons therefor.

The purpose of section 4(f) is to identify certain chemical substances or mixtures as high priority candidates for regulatory action and establish a deadline for acting to regulate such substances as are found to meet section 4(f) criteria. A chemical could meet the section 4(f) criteria when there may be a reasonable basis to conclude that it presents a risk from one of three effects--cancer, gene mutations or birth defects, and that the risk of this effect is significant and either serious or widespread. None of these terms--significant, serious or widespread--is precisely defined in TSCA.

The common technical use of these terms in the bio-medical sciences would suggest that "significant" would address both the probability that a risk of any magnitude could occur as well as the magnitude of the risk; and that "serious" and "widespread" would address the nature (i.e., major vs. minor) of any harm resulting and the size of the affected population, respectively.

For purposes of illustration, the following examples of usage are possible:

"Significant" -

> A particular animal cancer bio-assay indicates that chemical compound X is a carcinogen in at least two species tested and all sexes in these species. Compound X generally may present a risk of being a human carcinogen. To be "significant" it should further be established that--at <u>human</u> exposure levels--the risk is probable and would be high. A different chemical, compound Y, is positive in one species, one sex and at one high dose. It could, in theory, be a human carcinogen but it need not generally be considered to pose a "significant" risk to humans based solely on the <u>one</u> positive finding. Strong evidence for human risk should generally require that the carcinogenic effect be established as active in more than one species or at more than one dose.

If for compound X above, it were found that the carcinogenic effect is due to activation of a metabolic pathway not found in humans, then the risk from compound X could be deemed not "significant" as it would not occur in humans.

The carcinogenic effects of compound X could also be found to be secondary to physiological events (deposition of microcallculi, hormonal changes, necrosis, etc.) triggered by compound X at levels used in bio-assays but not at levels to which humans are exposed. Compound X would probably not pose a "significant" risk to humans. (See footnote 1)

"Serious" -

The concept of "serious" harm would have more utility in the consideration of gene mutational events or birth defects than in the case of cancer since malignant neoplasms in general are serious. Section 4(f) also draws a distinction between benign and malignant growths by use of the term "cancer" rather than "tumors".

"Widespread" -

A teratogen could produce a minor anomaly. If this occurred at one in one hundred thousand births, it need not be necessarily "serious" or "widespread". The same outcome at one in one hundred births, however, would certainly be "widespread".

The determination that a chemical meets the criteria of section 4(f) is, by statute, made by the Administrator of EPA.

When a chemical meets the criteria for section 4(f) priority status, the Agency must decide quickly whether to initiate action. The provision states that the Administrator must, within 180 days of the Administrator's receipt of the information

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(1) These considerations as to weight of evidence to establish human risk generally follow the recognized International Agency for Research on Cancer (IARC) criteria (IARC, Internal Technical Report No. 78/003) as to whether evidence is negative, limited, or sufficient for human carcinogenicity as well as the amplification of these criteria presented by Griesemer and Cueto (Scientific Publication No. 27, IARC, Lyon; p. 259-281 (1980)). The second paragraph draws from Weisburger and Williams (in Toxicology, Casarett and Doull, Eds., 2nd edition, MacMillan, N. Y. (1981) as well as from a more recent paper of Squire (Science, 214; 877-880 (1981)).

indicating the risk, initiate appropriate action under section 5, 6, or 7 of TSCA, or explain in the FEDERAL REGISTER why the risk is not unreasonable. As a purely technical matter, only rarely would a single study provide a reasonable basis to conclude that a chemical presented or would present a significant human risk. Risk is a function of toxicity and exposure. Therefore, exposure evaluations (which generally must rely on other studies than those raising toxicological concerns) are required in order to properly quantitate risk. The probability that risk would indeed occur can in general, likewise, only be assessed by review of all the available literature on a given chemical. Only when the diverse pieces of information which must go into a proper risk assessment are assembled into a reasoned evaluation can there generally be any scientific basis on which to draw reasonable conclusions as to the nature of human risk posed by a given chemical.

In certain instances the available data on a chemical may suggest that it poses a human risk but be insufficient to reasonably support a conclusion that the chemical presents a significant risk of serious or widespread harm [i.e., similar to a section 4(f) determination] and/or an unreasonable risk [a determination called for in other parts of TSCA]. The distinction between chemicals which may pose a human risk and those which pose either a significant and/or unreasonable risk [applicable to section 4(f) and/or section 5, 6, or 7, respectively] is important from a policy standpoint. This distinction and the TSCA data collection authorities allow the Agency to deal with chemicals on which the data are suggestive but inconclusive by use of sections 4(a), 5(e), and/or 8 so as to better develop a data base. This distinction also allows the Agency to place less priority on such substances as may be found to pose less than significant human risk even though the Agency may want to retain some oversight of activities involving such a substance.

Applicability of TSCA Section 4(f):

The principle decision before the Administrator at present is whether or not the data available on formaldehyde meet the criteria set out in section 4(f) of TSCA. The technical and policy arguments that these criteria are not met are presented for each substance in this report in greater detail below. Legal conclusions as to section 4(f) are not within my realm of expertise. In this report I have tried to define the technical practicalities of section 4(f) and to address the relevant policy issues.

Generally, the approach to section 4(f) that is presented is that, until the Administrator has reviewed the available data and reached a conclusion as to the significance of risk, any designation of data as having triggered section 4(f) is

scientifically arbitrary. This has tremendous practical and scientific underpinings as, in general, no one study by itself will be sufficient to indicate "significant" risk and the required determination that "there may be a reasonable basis to conclude that a chemical substance or mixture presents or will present a significant risk . . . " should, therefore, require a synthesis of existing and newly developed knowledge. Only when this synthesis is accomplished can a reasoned conclusion, in general, be reached.

As a policy matter, it is recommended that risk situations which are "significant" in the context of priority setting via section 4(f) be clearly distinct from risk situations which are generally not of immediate regulatory interest. In terms of individual lifetime cancer risks, the various federal agencies do not tend to regulate risks of 1×10^{-5} or lower and tend to be ambivalent about risks between 1×10^{-4} - 1×10^{-5}. Certainly (as absolute risks) these risk levels could never be detected any normal way and would (using 1×10^{-4} as an upper bound) represent increments of 0.03% or less above the estimated individual risk of persons in the U.S. population as a whole. (This risk is 1 in 3 or 3.3×10^{-1} according to the most recent National Cancer Institute figures.) In OPTS the relative risk range of 1×10^{-4} to 1×10^{-6} or lower has been a low concern range in general. The use of a range is appropriate since these risks, even at the 95% upper confidence limit, are only relative estimates for specific chemicals. To use such risk estimates as absolutes is inappropriate. This point was recently emphasized by Dr. David Rall, Director of the National Toxicology Program, in testimony before Rep. Gore during the 1981 NTP appropriations hearings.

FORMALDEHYDE:

Summary

Technical and policy discussion of these points is to be found in the body of this report.

Conclusions With Respect to Formaldehyde:

I concur with the recommendations of OTS staff that formaldehyde does not meet the criteria of section 4(f) for the following reasons:

(A) There is suggestive evidence that there may be human exposure situations--based on the integrated animal data base--which may not present carcinogenic risk which is of significance.

(B) There is a limited but suggestive epidemiological base which supports the notion that any human problems with formaldehyde carcinogenicity may be of low incidence or undetectable. It would not appear reasonable to say that a significant risk situation exists from these data.

(C) Assuming that risk--of some magnitude--does exist the calculated relative risks tend to fall into ranges which normally are of from low priority to no concern such as those discussed in the section immediately above on the applicability of TSCA section 4(f).

(D) One can, therefore (and as amplified below) conclude on the basis of available toxicological data, exposure information, and risk analysis techniques that: (a) formaldehyde is a carcinogen in the rat by the inhalation route; (b) its carcinogenic potential appears to vary significantly with species and route; (c) under certain exposure conditions it could present some carcinogenic risk to humans; and (d) given available data the risk estimates suggest that certain populations may experience a carcinogenic risk--albeit low--due to formaldehyde exposure. However, because of the nature of the toxicology data and the unreliability in the exposure data one cannot reasonably conclude, at this time, that formaldehyde poses a significant risk among the U.S. population.

Interpretation of Animal Studies with Respect to Human Risk -- Of a variety of bioassays (Table I) done since 1954 to assess the carcinogenic potential of formaldehyde only two have given clear positive results attributable to formaldehyde: a Chemical Industry Institute of Toxicology Study (CIIT) reported in preliminary form by Swenberg et al, Cancer Research, 40, 3398 (1980) and a study underway at the New York University Medical Center which is an extension of an earlier New York University study of 1979. Both of these have been inhalation studies in the rat. The CIIT study used three dose levels plus a control, the New York University study used a single high dose equivalent to the highest CIIT dose. Only nasal carcinomas were found in either study. Approximate mean lifetime incidences were 0% in control rats; 0% in rats at 2.1 ppm formaldehyde; 1.9% in rats at 5.6 ppm (not statistically significant); and 50% in rats at 14.1 ppm in the Swenberg study. The New York University study indicates (by letter of August 17, 1981 from Dr. Arthur Upton) an incidence of about 10% in rats at 14 ppm of formaldehyde.

Table I: Studies Considered in Evaluating the Carcinogenic Potential of Formaldehyde

Species	Route	Dose	Length	Incidence	Reference
Rat, ♀ & ♂, Fischer 344	inhal.	0, ppm 2.1 ppm 5.6 ppm 14.1 ppm	24 mos.	(0%) (0%) (1.9%) (50%)	CIIT study of Swenberg et al, nasal tumors only
Rat, ♂ Sprague-Dawley	inhal.	14 ppm	lifetime (19 mos. completed)	(~10%) nasal tumors	On going NYU study reported by Upton letter of Aug. 17, 1981
Rat, ♂, Sprague-Dawley	inhal.	14 ppm+ 10 ppm HCl	lifetime (27 mos.)	(27%) nasal tumors	NYU study of Laskin et al
Mouse, ♂ + ♀, B6C3F$_1$	inhal.	0 ppm 2.1 ppm 5.6 ppm 14.1 ppm	24 mos.	- (0%) - (0%) - (0%) (2%)	CIIT study of Swenberg et al, nasal tumors only
Hamster, ♂, Syrian	inhal.	10 ppm 30 ppm	lifetime	- (0%) - (0%)	Nettesheim, NCI - DOE study, 1977
Rat	s.c.[a]	formalin, 0.4%, 1 ml per animal weekly	15 mos.	(40%)	Watanabe et al, Gann, 45, 451 (1954) sarcomas at injection site only.
Rat	s.c.	HMT,[b] 40%. 2 ml per animal per week	until tumor development	(40%)	Watanabe et al, Gann, 46, 365 1955 sarcomas at injection site.
Rat, ♂+ ♀ BD	oral gavage	HMT, 0.4 g/day	12 mos.	(0%)	Brendel, Drug Res. 14, 51 (1964)
Mice (CTM, SWR, and C3Hf) and Rat (Wistar)	drinking water	HMT, 2.5 g/Kg/d	1 yr 2 yr	(0%) (0%)	Della Porte et al. Food Cosmetic Tox. 6, 707 (1968)[c]

Notes to Table:

a - sc = subcutaneous injection

b - HMT = hexamethylene tetramine

which decomposes in aqeous solution to give formaldehyde and ammonia with the stoichiometry:

$$1\ HMT \rightleftharpoons 4\ NH_3 + 6\ CH_2O$$

One gram of HMT is equivalent to 1.3 gram of free formaldehyde.

c - Della Porte et al, Tumori, 56, 325 (1970) also report a 3 generation study on Wistar rats with 2% HMT in drinking water which was negative for all three generations. This level of HMT is equivalent to about 2.5 g/Kg/d of ingested HMT which would be 3.3 g/Kg/d of formaldehyde.

The two studies used different strains of rat but are in general agreement. The CIIT study also exposed mice to formaldehyde gas but no statistically significant increase in tumors was observed. (See footnote 2.)

Other studies (some in other species and/or by other routes) have been generally negative save for a rat study of 1954 (expanded in 1955) using a subcutaneous injection route for 0.4% formalin or up to 40% hexamethylene tetramine (HMT, which gives rise to free formaldehyde, 1 gram HMT = 1.3 gram formaldehyde). In this study only sarcomas at the site of injection were found and these studies are not, therefore, generally accepted as being other than suggestive evidence of carcinogenecity. Significantly, the oral administration of hexamethylene tetramine to rats at up to 12.5 g/Kg/week was found to produce no tumors in three different investigations of up to two years duration (the same length as the CIIT inhalation study) conducted in 1964, 1968, and 1970. The oral route studies are somewhat limited by small sample sizes but, taking all three studies in aggregate, there is evidence which suggests a lack of a carcinogenic effect by this route. An important observation is that inhalation by hamsters at similar or higher exposure levels than used in the CIIT study has given a negative result. Formaldehyde appears, therefore, to exhibit considerable species specificity with the rat, the most sensitive of species so far tested.

Concern that formaldehyde gas may induce tumors in humans should be tempered by this observation that formaldehyde carcinogenicity appears to have a high degree of species specificity and a strong dependence on route of exposure. The rat, an obligatory nose breather, appears to have a particular nasal sensitivity to the deleterious effects of formaldehyde which may not be generally shared by other animals (man is not an obligate nose breather) or body sites. Based on the animal experimentation data, the most reasonable interpretation is that formaldehyde has carcinogenic potential, is probably locally acting, and is capable of both initiation and promotion.

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(2) The statistical significance of the CIIT results at 5.6 ppm in the rat (1.9% incidence observed) and 14 ppm in the mouse (2% incidence observed) was determined by CIIT as described in the CIIT document "Data Released to the International Agency for Research on Cancer (IARC) Working Group", dated October 19, 1981, which is appended as Appendix A.

The results of the CIIT bioassay are, however, sufficient to establish that formaldehyde is a potential animal carcinogen with mode and degree of exposure quite important to the toxic outcome. Based on the observed differences in response shown by rats, mice, and hamsters, different species have differing sensitivities. This may be a quantitative rather than a qualitative difference but the negative results of inhalation studies with Syrian hamsters at up to 30 ppm formaldehyde suggest that there may be qualitative differences in response among species as well. It can, however, be prudently expected that under appropriate conditions of exposure formaldehyde gas may pose a cancer risk to the respiratory tract of humans (i.e.: nasal and buccal cavities, trachea, bronchial trees, and lungs, see footnote 3). In the CIIT bioassay (see Appendix A), the development of nasal carcinomas was always preceded by hyperplasia, metaplasia and overt signs of cytotoxicity to the nasal mucosa (simply put, the animals developed open sores in their nasal tissues after which tumors appeared). In other cases, with other chemicals, where tumors appear to be secondary to cytotoxicity, no observable effect levels of exposure have been postulated (see, for example, Weisburger, J. H. and Williams, G. M. in Casarett and Doull's Toxicology, 2nd ed., MacMillan, NY (1981)). Since formaldehyde has genotoxic properties, any simple analysis is complicated but the findings of the CIIT research team which supported the bioassay have bearing on the interpretation of the results of the bioassay:

(1) At low exposure levels or short exposure times the hyperplastic and metaplastic effects of formaldehyde exposure were reversible. This suggests that a higher exposure level or longer exposure time may produce a qualitatively different outcome with respect to carcinogenesis than would result from low level or short term exposure.

(2) Normal endogenous tissue levels of formaldehyde produced by metabolism range from 3-12 Ng/g tissue (3-12 ppm). Much of this appears to be bound up as adducts to glutathione, tetrahydrofolate, and proteins. From 10%-40% of the total tissue formaldehyde appears to exist as free formaldehyde (0.3 Ng/g - 4.8 Ng/g). A sustained exposure of 3 ppm formaldehyde in air is needed to double the endogenous level of formaldehyde.

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(3) Other body sites are theoretically possible targets but, due to a variety of studies demonstrating rapid metabolic conversion of formaldehyde at or near the sites of uptake (Maloney, 6, et al; Arch. Exp. Pharmacol., 250; 419-436 (1965); McMartin, K.E., Biochem. Pharmacol., 28; 645-649 (1979)) it is expected that the respiratory tract will be the principal, possibly sole, target organ at risk. A high degree of site concordance between humans and animals has been suggested by Tomatis (L. Tomatis et al, Cancer Research, 38; 877 (1978)).

(3) There appears to be an absence of cytotoxic effects of formaldehyde at or below 1.0 ppm in air.

(4) Radio-isotope tracer measurements indicate that absorption of formaldehyde gas from imspired air is essentially complete within the nasal cavities and formaldehyde gas does not reach the trachea, bronchi or lungs of rats at the exposures used in the CIIT study.

(5) Formaldehyde is a mutagen. As such it is a potential genetoxic carcinogen. Aldehydes, as a chemical class, are also promoters of carcinogenesis (Slaga, T. J., Sivak, A.; and Boutwell, R. K.; Mechanisms of Tumor Promotion and Cocarcinogenesis, Raven Press, NY, 1978). Formaldehyde can, then, potentially both initiate and promote the carcinogenic process. A promoting and/or cocarcinogenic effect of formaldehyde is supported by other studies cited in Table I, in particular the various New York University studies. Promotion generally requires repeated, long term exposure to the promoter and is reversible [(Weisburger, J. H. and Williams, G. M.; "Chemical Carcinogenesis" in Holland, J. F. and Frei, E. (eds): Cancer Medicine, 2nd ed., Lea and Febiger, Philadelphia, 1980)], may involve damage to cellular components (Slaga et al (supra), 1978), and is a requisite, at some point, to the carcinogenic process. When taken together with the observations reported by CIIT on the reversibility of hyperplastic and metaplastic effects (vide (1) supra) and an apparent cytotoxicity threshold (vide 3) supra) the degree to which formaldehyde promotes its own carcinogenesis may lead to qualitative, as well as quantitative, differences in response within different regions of the dose-response curve.

An argument can be made that any initiating effects of formaldehyde would, nonetheless, produce a population of latent malignant cells. These cells could then produce malignancies in response to other promoters (endogenous or exogenous) as the animals grew older. In such a case the difference in response to formaldehyde exposure at different exposure levels would be only quantitative and not qualitative. This argument is a classical one (See Weisburger and Williams, 1981, supra) and has some merit as a general argument. It needs to be discussed, however, in the context of formaldehyde as it affects the nasal mucosa.

Clearly, in the absence of detoxifying mechanisms, the endogenous levels of formaldehyde should be potentially capable of initiating some cells. The observed absence of nasal carcinomas in rodents as spontaneous tumors (for example, Dr. A. Upton communicates by letter of August 17, 1981, that in 14 years with 1,920 rats he has not observed a single grossly visible nasal carcinoma) indicates one of

four things: (a) no cells are in fact initiated by endogenous levels of formaldehyde or repair processes at low exposure are faster than processes leading to cell transformation; (b) there are not endogenous promoters available to allow expression of the transformed cells; (c) any cells initiated are lost before their malignant potential can be expressed or (d) the tumor incidence is so low as to be undetectable.

The first situation would de facto, define a practical threshold for genotoxicity. Formaldehyde is an endogenous metabolite and it is possible that mammalian cells may deal effectively with low levels of it.

The second situation could suggest that promotion by exogenous factors (formaldehyde could be one) was the controlling element in formaldehyde carcinogenesis. This would imply a lack of carcinogenic effects at exposures to exogenous factors which did not result in promotion. The observation, by CIIT, that tumor formation could be secondary to a formaldehyde induced cytotoxicity, hyperplasia, and metaplasia does suggest that the promoting effects of formaldehyde may be quite important. At low exposure levels the hyperplastic, metaphastic, and cytotoxic effects observed were reversible in the CIIT study.

The third situation is probably relevant to the question of formaldehyde carcinogenesis. Normally, the epithelia of the nasal mucosa loses matured cells which are then daily replaced by underlying stem cell layers. Thus, cells which might be initiated by formaldehyde could be lost from the epithelia before their malignant potential could be expressed. This possibility has not however, been addressed experimentally.

The fourth consideration may have some bearing but in a variety of studies (CIIT and those of Dr. Upton's colleagues at NYU) over 2,000 rats have been observed as a historical control. If nasal carcinoma occurs spontaneously in rats, its incidence would be very low. (See footnote 4)

The observed lack or low incidence of spontaneous nasal carcinoma in rats--given the endogenous levels of formaldehyde present--is probably explained by a combination of the above

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(4) One rat developing a tumor per 2,000 animals would be an incidence of 5×10^{-4}. This is not the same as the level of risk to rat or, possibly, human but suggests that individual risk from endogenous tissue levels of formaldehyde might be bounded by numbers of similar magnitude.

considerations. The net result is that there would appear to exist some lower bound to the observable carcinogenic effect of formaldehyde resulting from exposure to exogenous sources.

As such, the above considerations regarding endogenous levels of formaldehyde coupled with observations of CIIT of the reversibility of formaldehyde related effects at low exposure levels suggest that low level exposures (<1-2 ppm) probably would not present a significant risk of a carcinogenic outcome. The CIIT radio-isotope work also would suggest that carcinogenic risk from airborn formaldehyde could be restricted to the nasal and oral cavities. According to IARC documents there is nearly an 80% site concordance between humans and animals for those human carcinogens adequately testing in animal systems (L. Tomatis et al, Cancer Res. 38, 877 (1978)).

Considertion of Existing Epidemiology Data - A number of small scale retrospective epidemiology studies on groups occupationally exposed to formaldehyde have found no excess of cancers of any type, in particular nasal or oral, in these groups which can be attributed to formaldehyde exposure when corrected for smoking and drinking. The annual incidence of human nasal cancer is about one in one million (1×10^{-6}). While I recognize the limits of sensitivity inherent in epidemiology, such data are useful. In particular, for chemicals of long standing and well defined use, epidemiology could tell if a critical situation exists. If formaldehyde were a potent human risk, this should show up epidemiologically. There does not appear to be any relationship, based on the existing data base on humans, between exposure and cancer. Real human risk could be considered to be low on such a basis.

Human Exposure to Formaldehyde - Human exposure to formaldehyde is at levels generally much lower than those used in the rat inhalation studies. Typical values are ca. 0.005 - 0.3 ppm in ambient air in urban areas, 0.0004 - 0.005 ppm in rural locations, and 0.1 ppm in urea-formaldehyde (UF) foam insulated dwellings. It has not been possible to demonstrate a statistically significant difference in exposure levels in UF foam homes as opposed to non-UF homes. Occupational exposures can be higher but are generally less than 2 ppm formaldehyde. These occupational exposures are, also, for short periods and of an intermittent nature. Table II presents a distribution analysis of exposure levels.

TABLE II FREQUENCY DISTRIBUTION OF EXPOSURE ESTIMATES IN FORMALDEHYDE PRL-1 TECHNICAL DOCUMENT

These data are extracted from the integrated exposure assessment in the PRL-1. Only estimates given for populations of a known size are considered. High and low refer to the upper and lower bounds of estimated exposure ranges.

INTERVAL (ppm)	Number of estimated exposed individuals			
	Low	Percentage of Total Individuals Exposed	High	Percentage of Total Individuals Exposed
0 - 0.1[b]	2.24×10^8	99.4[a]	2.20×10^8	97.6[a]
0.1 - 0.5	7.09×10^4	0.03	4.50×10^4	0.02
0.5 - 1.0	3.00×10^4	0.01	-	-
1.0 - 2.0	3.04×10^4	0.01	5.89×10^4	0.03
2.0 - 5.0	1.24×10^6[c]	0.55	3.86×10^6[d]	1.71
5.0 -	-	-	1.26×10^6[e]	0.56

a/ % of total individuals exposed

b/ includes U.S. population via ambient air

c/ 97% are college students who on an average are exposed to an estimated 8.3 ppm for very short periods and over a limited time. Humans cannot tolerate formaldehyde exposures above 5 ppm and so this group is probably exposed to far less than the PRL-1 average estimate.

d/ 57% are mobile home residents at an average 0.4 ppm; 40% are U.F. home residents at an average of 0.72 ppm

e/ 95% are the same college students as in footnote c.

Humans do not adapt to levels of airborne formaldehyde over 5 ppm and levels from 2 - 5 ppm are generally very unpleasant. The "high" side of the PRL-1 exposure ranges should, then, be viewed critically as this suggests a very sizeable group is exposed - on a regular basis - to levels of formaldehyde above 2 ppm. It must be noted that for the group footnoted as (d) in Table II, the "high" value derives from short transients in complaint homes and is non-representative. The appropriate averages are indicated in the footnote. The exposure group footnoted as (e) in Table II, similarly is constituted by using a single excursion, transient as an upper bound on the range of exposure. The footnote (c) explains that PRL-1 assigned these college biology students an average exposure of 8.3 ppm several hours a week. Clearly, this number is not to be relied on since humans cannot breathe in such an environment. The column listed under "low" is to be taken as more representative (with the possible exception of the college biology students). Table II suggests, then, that nearly all prolonged human exposures are at levels well below 2 ppm.

Given that quantitative and possibly qualitative results of exposure to formaldehyde appear to depend highly on exposure level, species, and route; that rats seem to be particularly sensitive to formaldehyde; and that long human experience does not seem to indicate any pressing concerns; I must concur with OTS' staff recommendations in this matter - that formaldehyde ought not be considered subject to TSCA section 4(f) at this time.

Deficiencies in the Original OTS PRL-1 Document:

The original review of formaldehyde (PRL-1) was deficient in a number of areas -

(1) Exposure Estimates: This was the major deficiency in the original document. In many situations the exposures given were not obtained by analytical methods similar to that used to monitor formaldehyde levels in the CIIT study. No attempt was made to address the comparability of methods so it is not clear that 1 ppm by any given method equates to 1 ppm exposure under the CIIT protocol. This has the effect of making any subsequent risk analysis (which must be exposure based) an "apples and oranges" comparison. Table III points out the various methodologies cited in studies covered by the PRL-1 document.

TABLE III: Number of Exposure Estimates by Type of Analytical or Collection Method in Formaldehyde PRL-1

METHOD	NUMBER OF ESTIMATES	BASED ON METHOD[a]
		as % of all studies
Acetylacetone	1	1.1%
Bisulfite impingers	18	20.7%
Chromotropic acid	17	19.5%
Chemiluminescence	3	3.4%
Colorimetry	7	8.0%
Charcoal tubes	9	10.3%
Solid sorbents	1	1.1%
Draeger Tubes	3	3.4%
FT Spectroscopy	2	2.3%
Gas Chromatography	1	1.1%
Ion Chromatography	7	8.0%
MBTH Method	1	1.1%
Spectrophotometry	3	3.4%
Not Known	14	16.1%

[a]Number of studies in data base which cite a particular method. Some studies cite more that one method.

The PRL-1 review also used the highest values of formaldehyde found in any given monitoring study as its exposure levels for risk analysis. This is not well advised since these high levels are in most cases transients or single excursion values (i.e.: not continuous) and do not, therefore, represent the risk picture adequately. The tendency of the PRL-1 to use exposure levels greater than 2 ppm when calculating exposure to some populations is flawed as well since humans do not well tolerate exposures to formaldehyde which are higher than around 2 ppm. Even though some adaptation can occur, this is unknown above 5 ppm yet PRL-1 uses exposure levels above 5 ppm as prolonged exposures.

The poor quality of the exposure estimates is repeatedly acknowledged in the PRL-1 and forms the basis for the recommendations contained in the earlier draft Federal Register notice and action memorandum (see below). As such, any risk estimates given in the PRL-1 must be viewed very skeptically. It is not clear that such estimates would be a reasonable basis to do other than conclude that one needed better exposure data. This, in effect, is what OTS staff originally concluded and is in the earlier Federal Register notice draft of which NRDC has a copy.

(2) Evidence for Carcinogenecity: The PRL-1 concludes that formaldehyde is an animal carcinogen. It downplays a number of negative bioassays which suggest that its effects may depend highly on species, route and site. No attempt was made, also, to address the question of mechanism of action or other physiological/biochemical questions relevant to the extrapolation from rat to human even though such information was available from CIIT.

The discussion of human epidemiology emphasized studies which showed marginal differences in total cancer rates (i.e., the treatment of one study in which one cohort had a slight increase in total cancer tate relative to historical controls but a second cohort showed no such effect. Much was made of the "positive" cohort but the negative cohort was downplayed). No trend was seen toward increases in any specific cancer (as is common for human chemical carcinogens) in any study. The human data do not show signs (such as correlation to a specific tumor) usually seen for a human carcinogen and do not, as is discussed above, generally suggest any specific effect of formaldehyde.

Risk Assessment:

The PRL-1 document contained a risk assessment performed by use of the Crump multistage model and based on the high exposure estimates presented in the PRL-1 document. OTS staff has also calculated a risk analysis based on median (more representative) exposure values. Relative risks are calculated and expressed as 95% upper confidence limits on lifetime risks.

Table IV presents a population distribution of relative individual risks as calculated by OTS staff in PRL-1 using representative (median or average) exposure estimates. Risk is divided into order of magnitude ranges and the size of the affected population falling into each range is given. As can be seen nearly all individual risks fall into the range $1 \times 10^{-6} - 1 \times 10^{-4}$. This places them into a range in which priority action is often not considered. A similar situation exists for populations of unspecified size (Table V). Again, if the human risk were real, the magnitudes of individual risks do not seem to compel a "fast track" approach. This seems to have been recognized in the draft FR notice prepared in 1981 by OTS under Dr. Muir. That notice proposed to engage in a two year effort to collect exposure data so as to refine the risk calculations. This stemmed from the poor quality of the exposure analysis in PRL-1 and the low relative magnitude of the estimated individual risks.

The risk calculation used by OTS included the 5.6 ppm exposure level as a non-zero incidence data point. CIIT has since determined this point to be statistically no different than the 0 ppm and 2.1 ppm exposure results (see Appendix A). If this 5.6 ppm exposure were treated as a zero response point, the risk estimates of Tables IV and V would shift, in distribution, to yet lower values.

The risk estimates in PRL-1, also, do not take into account that tumor formation in rats appears to require a long term, high level exposure and that the human exposures are likely to be relatively short. Workers might see 1 ppm or less intermittently over a 40 year work career assuming no change in occupation (see footnote 5). College students in biology

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(5) The OSHA standard for formaldehyde is 3 ppm but OSHA documents indicate that workplace exposures are generally less than 1.5 ppm. OPTS staff agree that this is an appropriate and representative number as a general upper bound on workplace exposures.

TABLE IV: DISTRIBUTION OF RELATIVE INDIVIDUAL LIFETIME RISKS AS DERIVED FROM PRL-1 FOR FORMALDEHYDE

Range of Risk	Population Size[a]	% of Total	
		A	B
10^{-6} - 10^{-4} (0.003)[b]	2.14×10^{8}	99.9	95.0
10^{-4} - 10^{-3} (0.15)	1.52×10^{5}	0.071	4.1
10^{-3} - 10^{-2} (1.5)	3.13×10^{4}	0.015	0.9
10^{-2} (3)	0	-	-

A: Total of all identified populations

B: Excluding ambient air and water exposures

[a]This table applies only to exposed populations for which a size was estimated in PRL-1

[b]NCI data indicate that individuals of the U.S. population have an average individual lifetime risk of contracting cancer of 3.3×10^{-1}, the number in parenthesis is the % increment above this average represented by a risk in the center of each indicated range save for the last range in which case the % increment is that due to the boundary risk.

TABLE V: DISTRIBUTION OF GROUPS WITH UNSPECIFIED POPULATION SIZE BY RELATIVE RISK INTERVALS

Both maximum likelihood and 95% upper confidence estimates of relative individual lifetime risk are shown. For comparison, according to recent National Cancer Institute figures the absolute risk of contracting cancer over a lifetime is approximately 1/3 or 3.3×10^{-1}. For each risk interval the percentage increase in lifetime risk (assuming the risk estimates are absolutes which they are not) is presented.

Interval		Number of size	Undetermined groups
range	% incremental[a]	MLE[b] Maximum likelihood estimate	ULOC[c] Upper Limit of Confidence
$<10^{-5}$	0.003%	6	0
$10^{-5} - 10^{-4}$	0.03%	3	7
$10^{-4} - 10^{-3}$	0.3%	2	3
$10^{-3} - 10^{-2}$	3%	0	1[d]

[a]/ % increment above NCI determined lifetime risk of 3.3×10^{-1}

[b]/ Maximum likelihood estimate

[c]/ Upper limit of 95% confidence

[d]/ Represents one group with a 20 fold range in estimated exposures.

labs are, similarly, a large group (1.2 million individuals) which the PRL-1 assumes are exposed over 70 years. In fact, exposure of nearly all of these students would be generally on the order of one year or less.

Another factor not considered in the PRL-1 risk estimates is that the animal evidence would suggest that inhalation of formaldehyde by humans should produce tumors (if any are seen) primarily of the oral, pharyngeal and nasal mucosa (see footnote 3). These are well defined sites for which the limited epidemiological evidence does not suggest an association with formaldehyde exposure under what are poorly documented but probably representative conditions.

In summary, the PRL-1 does serve to identify some possible areas of concern. From a technical standpoint it would appear to be premature to "fast-track" any regulatory actions since we have estimates only on the upper bound of any risks and these do not, when reasonable assumptions are made, appear to be significant. The draft FR notice (discussed below) which was prepared by OTS on the basis of PRL-1 review acknowledged as much by specifying no regulatory actions per se. The proposed response was, rather, to conduct monitoring surveys of the actual exposure conditions so as to better quantitate the risk. This de facto recognizes that the PRL-1 numbers were highly unreliable and that a proper risk assessment had yet to be done. PRL-1 does not seem to sustain a reasonable conclusion that formaldehyde presents a significant risk of cancer to humans.

Deficiencies in the draft Federal Register notice on formaldehyde:

In 1981 OTS drafted a proposed Federal Register notice on formaldehyde for the signature of the Administrator.

This notice presented a logical sequence and I have analyzed the rationale employed as follows:

(A) Formaldehyde is an animal carcinogen;

therefore,

(B) it is a potential human carcinogen.

(C) Formaldehyde is a high volume chemical;

therefore,

(D) it presents wide spread exposure potential.

(E) Some individual exposures are estimated to be high;

therefore,

(F) some exposures are serious.

Given (B), (D) and (F), then

(G) Formaldehyde is a potential human carcinogen that presents serious or widespread exposures;

therefore,

(H) formaldehyde meets the section 4(f) criteria for "significant" risk of "serious" or "widespread" harm.

There are a number of flaws in this line of reasoning. Some are explicitly acknowledged in the draft FR notice but others are more subtle and need to be addressed first:

(1) The meaning of the term "significant" in the draft FR notice is not consistent with the common technical meaning as discussed above. No case is made for other than formaldehyde being a potential or possible human carcinogen. The degree to which this may or may not be an actuality (i.e., the significance of this risk in terms of probability of existence and magnitude if it exists--as discussed under Technical Issues above) is not addressed. Therefore the draft FR notice uses the words "significant" and "potential" synonymously.

(2) The assumption that a high production volume equates with a high or "widespread" exposure potential is very weak. In general, the degree of correlation between production volume and exposure will depend on uses and handling methods. A blanket assumption, as used in the FR draft notice, is not justifiable in the absence of supporting evidence.

(3) The conclusion that some individual exposures are "serious" is premised on faulty assumptions as to exposure levels as previously discussed.

The plain language of the statute calls for initiation of regulatory action under sections 5, 6 or 7 as the response to be made under section 4(f). The proposed gathering of exposure data--the response given by the FR draft--appears to be an acknowledgement that the significance of any risk from formaldehyde has not been reasonably evaluated since, as a result of gathering this exposure data, it is further proposed to evaluate risk to see if further action is appropriate. The premises and conclusions in the FR draft appear to be faulty.

DEHP:

No detailed analysis is presented of the DEHP situation since work culminating in the PRL-1 and draft Federal Register documents was based on incorrect exposure assumptions. The policy analysis given in the section on formaldehyde applies to the DEHP case.

For purposes of discussion and comparison, the risk estimates in the PRL-1 document are given and then discussed briefly:

Table: PRL-1 Risk Estimates

Group	70 yr Individaul Risks	Potential Cases[a] Over 70 years
hemodialysis patients (45,000)	1×10^{-3}	45
hemophiliacs (19,000)	1×10^{-4}	1.9
U.S. population via food (250 million)	7.5×10^{-7}	188
U.S. population via drinking water (250 million)	6×10^{-7}	150
[b]Occupational (as in PRL-1 originally)		
Manufacturing (335)	1×10^{-4}	0.03
Processing (40,000)	1×10^{-4}	4
[b]Occupational (as revised by OTS)		
Manufacturing (335)	1×10^{-5}	0.004
Processing (40,000)	1×10^{-6}	0.04

a Assumes 95% upper confidence limit is an absolute risk, it is in fact relative and an upper bound on any relative risk present.

b Revised on the basis of exposure data presented at the 1980 pthalates conference.

It must be pointed out that the first two groups in the Table are not affected by TSCA since their exposure is a result of contact with medical devices under the purview of FDA. These are also groups

which are at high risk from their diseases and the benefits of these medical devices should probably far outweigh the risks indicated. In any case, they cannot be factored into any analysis of TSCA applicability.

Estimates for the dietary risks to the U.S. population as a whole fall below the range in which regulatory agencies do not take any actions. The exposures were estimated as described in PRL-1 and are of good quality, in my opinion.

The drinking water estimate is the average number contained in PRL-1. I believe it to be representative and, again, the risks are below the range in which we would normally not act.

The original Federal Register document was driven largely by the occupational risks given in the table. The risks begin to push up into the range in which we would normally consider some action (regulatory or non-regulatory) but are, nonetheless, lower than what might push a priority designation. As a result of the 1980 phthalates conference, OTS staff realized that the exposure estimates which had been used to generate these risks were completely incorrect. In essence they postulated a DEHP concentration (as vapor in air) higher than the vapor pressure of DEHP could generate.

The exposures and associated relative risks were recalculated and are given in the PRL-1 Risk Estimates Table as revised occupational risks. With the revision of the occupational exposure numbers reason to take any action with respect to DEHP disappeared.

There has not, since the detection of the errors in occupational exposures, been any reasonable basis upon which DEHP could be considered to pose significant risk to humans - given current use patterns - and I concur with OTS staff that DEHP cannot be recommended to you as a candidate for section 4(f) designation.

As a final comment on DEHP, there are enough anomalies in the result of the NCI bioassay that I remain unpersuaded that DEHP should be considered a human carcinogen.

EXHIBIT 7

STATEMENT ON

UREA - FORMALDEHYDE FOAM INSULATION

AND FORMALDEHYDE

Before the

SUBCOMMITTEE ON

COMMERCE, CONSUMER, AND MONETARY AFFAIRS

May 19, 1982

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As the Canadian Federal government prepares to spend 110 million dollars in a urea-formaldehyde foam insulation (UFFI) "relief programme" for the 80,000 or so "UFFI-struck households", I can't help but conclude that the banning of UFFI in Canada is turning out to be one of the most costly and ill-conceived blunders to have been perpetrated on a modern and supposedly well educated society. After more than half-a-million homes in North America were insulated with UFFI over the course of 12 years, foam insulation was banned by both the U.S. and Canadian governments on the grounds that living in homes with UFFI constituted a health hazard. In fact, the Canadian government not only approved the use of UFFI in 1976 but subsidized its use in 30,000 homes through the Canadian Home Insulation Programme (CHIP). I first became suspicious that there might not be any scientific basis to the supposed UFFI problem when as a busy Chest Physician and Director of a large Lung Unit, and in spite of carefully searching for affected patients, my colleagues and I in Toronto and Hamilton did not find a single documented UFFI-related case of asthma or rhinitis.

There is no scientifically sound evidence to support the contention that UFFI or indeed formaldehyde in domestic concentrations is a significant health hazard in man. Not only do very few of us live in a

formaldehyde-free environment, but like oxygen, nitrogen and carbon dioxide, components of the air we breathe, formaldehyde is present in every cell in our bodies in low concentration. It is a ubiquitous material in our environment and is an integral part of contemporary life. It is found in a number of common materials and processes aside from UFFI insulation and vaporizes readily from bonding materials in plywood, chipboard, acrylic carpeting and carpet bonding agents as well as permanent press fabrics. It is present in contraceptive foams, cosmetics and car exhausts and is found in up to 40 ppm concentrations in tobacco smoke. It is likely for this reason that the formaldehyde concentration in non-UFFI insulated homes and those insulated with UFFI was found to be similar in Canadian Health Ministry, and University of Iowa studies conducted in the past 3 years. Furthermore, the New Jersey Department of Health study showed that many of the same symptoms were more prevalent in individuals living in houses without UFFI than in those with UFFI while, at the same time, the overall frequency of health complaints was greater in those homes without UFFI.

In Massachusetts prior to the ban, in February 1979, complaints occurred in only 1/4 of 1% of 50,000 homes with UFFI, while in another group of 5,330 homes there

were no complaints whatsoever. In the same vein, insulation contractors who have installed cellulose or fiberglass but not UFFI have reported hundreds of calls from their customers describing the "media symptoms" after reading about the hazards of UFFI in their local paper. Callers said that they immediately felt much better after being assured that their homes did not contain UFFI.

In Massachusetts, the first State to ban UFFI, the Commissioner of Public Health was sued by a number of UFFI manufacturers on the grounds that the decision to ban and remove the UFFI from homes was not based on provable health effects. In a January 1982 landmark decision of the Superior Court of the State of Massachusetts, Judge John Ronan ruled that the Department of Health had prejudged the issues in the UFFI controversy and that the ban was in fact "arbitrary and capricious" and "not based on scientific facts". It was revealed that many homes without UFFI were found to have higher levels of formaldehyde than UFFI homes and that many other sources of formaldehyde were overlooked in the U.S. Consumer Product Safety Commission's overzealous attempts to ban UFFI. Judge Ronan's decision stated that the State of Massachusetts held public hearings for only two days on the health effects of UFFI, none of which was under oath or backed up by expert testimony such as doctors' certi-

ficates. None of the testimony was ever verified nor was the UFFI industry allowed any type of cross-examination or indeed to present its case at all. It seems that Health and Welfare Canada, with its 1981 UFFI Moratorium and subsequent final banning in February 1982, proceeded in a similar fashion based on the Massachusetts and CPSC information without thoroughly investigating the matter either. The Massachusetts Court ruled it was incorrect to classify exposure to formaldehyde as an irritant or as toxic at any level of concentration. Consequently the finding that formaldehyde is "hazardous" irrespective of any given level of exposure was likewise without a rational basis in fact. If UFFI is all that harmful, then how can it be that in Europe where it has been used for more than 20 years, health effects similar to those described in North America have not been a problem, governments have not banned UFFI and its installation as insulating material continues?

Why then, one might ask, are there so many complaints coming from people living in UFFI homes? To understand why this might be so one must realize that whenever symptoms occur in human beings, the affected persons engage in what Behavioural Scientists call "attribution". That is, they want not only a cure for the symptoms but they want to know what the symptoms are due to. Doctors call this a diagnosis. It is an unfortunate fact that

people living in all kinds of environments including UFFI homes have many symptoms. If people live in UFFI homes, they are likely to attribute these symptoms to the most proximate and best publicized cause namely formaldehyde coming from UFFI. The fact that they attribute their complaints to UFFI or formaldehyde does not of course mean that the symptoms are so caused. This brings me to another very important point, namely how can one determine that the attribution is or is not correct when people living in UFFI homes complain that their symptoms are formaldehyde-related.

The only way of determining this is to do adequate epidemiological studies. In order to be able to evaluate health effects, complaints and data provided by scientists we must appreciate the difference between valid data which has been properly obtained and analyzed and data that is not valid because it is not scientifically correct.

The science of epidemiology provides the foundation for evaluating such data.

Epidemiology is the study of patterns of illness within communities, work forces or other selected groups such as formaldehyde exposed workers or homeowners. It is a well established science which has provided reliable information allowing us to link smoking and lung cancer, or occupational asbestos exposure or coke oven gas exposure to a much higher incidence of lung cancer than

would be caused by cigarette smoking alone. The methods of epidemiology are rigidly scientific and must be followed if the conclusions are to be valid. I stress this in the present context because as you will see, most of the studies on which the UFFI ban in the United States and Canada were based were not performed in a scientifically valid way. Such valid epidemiological studies require:

(1) That the risk group be identified.

(2) That the symptoms be validated.

(3) That sampling be random.

(4) That there be appropriate controls.

(5) That both ambient and indoor formaldehyde concentrations are measured.

(6) That the studies be corrected for confounding factors such as cigarette smoking that might produce many similar symptoms. Before attributing problems to a substance such as UFFI, one has to consider that other substances in the environment might also give off the agent being studied, in this case formaldehyde.

Many studies claiming to be scientific or epidemiological that have omitted these criteria are invalid and must be discarded. Indeed studies of the kind that merely collect symptoms without appropriate controls or without relating the symptoms to formaldehyde concentrations, can only be called "prescientific". Such data is invalid

and should not be given much credence, except possibly as the beginning of a proper scientific investigation.

It is in this context that we should examine the complaints in man. I shall call most of these complaints "media symptoms" because they have appeared so often in the press and are therefore well known to everyone, particularly those people living in UFFI insulated homes or mobile homes.

In man, the "media symptoms and diseases" related to formaldehyde or UFFI can be divided into relatively minor complaints such as fatigue, dizziness, headaches, nausea and irritation of the eyes, nose or throat which rarely occur under 0.5 ppm, and major problems such as asthma or cancer. At worst, the minor complaints may be regarded as irritants. There is absolutely no scientific evidence that formaldehyde, in concentrations resulting from UFFI vapour or other domestic sources of formaldehyde in homes, can produce asthma or cancer in man. In the case of asthma, a careful study performed at the Mayo Clinic in 20 asthmatic patients from UFFI homes was unable to demonstrate that the asthma could in any way be related to formaldehyde or UFFI dust. As for malignancy, five human studies from England, Denmark and the United States in formaldehyde-exposed workers between 1975 and the present failed to find a single case of upper respiratory tract cancer or any increased overall risk of cancer attributable to formaldehyde in

concentrations up to 50-100 times those found in UFFI homes. There is no doubt however that 46% of rats exposed to 15 ppm of formaldehyde for 6 hours a day during virtually their whole lives developed nasal cancer. Mice similarly exposed had an incidence of nasal cancer less than 1%. In my opinion there is no health hazard whatever other than the potential for mild irritation of exposed body surfaces from domestic concentrations of formaldehyde up to .5 ppm except perhaps in the very rare ultrasensitive individual. There is no doubt in this context that individuals going into garment stores, following installation of new plywood cabinets or after laying of new carpeting, transiently complain of irritative effects which may well be due to formaldehyde vapour. After a short time however, the vapour concentration returns towards ambient and such effects disappear.

In my opinion, at the present time, the health effects of formaldehyde and UFFI have been grossly exaggerated by the media, Ministries of Health that have not put the minor irritative effects into context and, often even inadequately advised politicians who with the best of intentions to protect their constituents, have added to what I believe to be mainly mass attribution.

From the available evidence, the following conclusions can be drawn:

CONCLUSIONS:

(1) Formaldehyde levels in almost all UFFI and non-UFFI homes are similar and are below levels at which even irritative symptoms would be expected. However, since rare persons may be super-susceptible each person claiming effects should be carefully and scientifically tested and the results related to indoor formaldehyde levels.

(2) When controlled studies are performed symptoms recorded in patients from UFFI homes are similar in nature and frequency to those in non-UFFI homes. It is unlikely that most of these symptoms are formaldehyde related at all even though the symptoms have recently been attributed to formaldehyde by some "experts".

(3) There is no evidence that domestic concentrations of formaldehyde constitute a significant health hazard in man. Specifically there is no scientific evidence of asthma or human malignancy. Indeed all of the available evidence is to the contrary.

(4) Since formaldehyde is so ubiquitous and has been a widely used industrial substance for 100 years without evidence of major health-related problems and is not a new chemical, the onus should be on those claiming that it is toxic and hazardous in low concentrations to prove that fact.

I believe that in the light of the accumulating evidence, the Departments of Consumer Affairs and Ministry of Health in Canada and their equivalent in the United States should carefully reassess the situation because I think, if they do so, they will come to the same conclusion that my colleagues and I have reached namely that there is no health hazard. On the other hand, at the present time, several million residents of UFFI homes in the United States and Canada are suffering major emotional and potential, stress related, physical injury due to fear and anxiety that comes with living in homes which they believe to be hazardous and devalued due to formaldehyde. The human cost in jobs lost and industries destroyed can only be surmised.

Only a clear statement by appropriate authorities that domestic concentrations of formaldehyde are perfectly safe will begin to reverse and correct the present disastrous situation.

As an additional philosophical point, I am deeply concerned about the significance of the present debacle with respect to the soundness of those institutions which should protect us from superstition and illogical and unscientific responses to societal myths. If government or government-related organizations such as the Consumer Products Safety Commission, the Ministries of Health in our respective countries, NIOSH and OSHA do not insist on

a high level of scientific proof before acting on such things as the so-called formaldehyde "hazard", society's best interest will certainly not be served and the risk of similar disasters in future will be very high. If these organizations do not protect us who will?

I can certainly sympathize with regulatory agencies faced with the decision to ban new chemicals, shown by toxicologists, to be hazardous to animals but surely much more caution must be exercised when a chemical such as formaldehyde in common use for about 100 years is called into question. In that case, regulatory agencies should probably not act until sufficient evidence of the toxicity and/or hazardousness of the substance is available.

This is especially true of formaldehyde that is ubiquitous in nature and for which there is absolutely no evidence of a significant health hazard in man.

(1) Power of human studies to detect an increased risk of

(a) All cancer, (b) Respiratory cancer.

Power to detect SMR of 2.0, i.e. twice the risk of

Ca in target groups.

Standard Mortality Rates (SMR) = $\frac{\text{No. of deaths in exposed sample}}{\text{Expected No. of deaths from referenced population.}}$

Source		N	Prob.	Eb	Power
Harrington & Sharman					
Pathologists	All Ca.	2079	.0322	4.39	>99.9%
	Resp.		.0139	2.35	99%
Technicians	All Ca.	12994	.00462	4.12	>99/9%
	Resp.		.00169	1.96	97.5%
Wong					
Chemical workers	All Ca.	2026	.0182	2.94	99.8%
	Resp.		.0059	1.09	86%

Conclusions

Increased risk of Ca. overall, resp. Ca. would be detected by present studies.

Clearly because of low incidence of nasal Ca., (6 cases in Canada last year), much larger samples required. But absolute risk is apparently very low, since no cases reported in any of these studies, and others.

And formaldehyde not implicated in case/control studies (See paper by Barnes).

(2) Gibson - CIIT (Chemical Industry Institute of Technology).

Further analysis of animal studies.

Why did rats get nasal Ca. and mice did not?

(a) Analysis of anatomical structures.

	Rat	Mouse
Volume FM/min	0.114	0.012
Surface area	13.4	2.9
Dose/min/cm²	0.15	0.076

∴ Rats receive 2 x dose/surface area as mice.

(b) Mutagenicity of FM is weak or not at all.

Why then did Ca. develop, in only 15 ppm rats?

Cell proliferation (based on C^{14} tracing I think)

	Rats
Control	0.22
0.5 ppm	0.38
2 ppm	0.33
6	(5.40)
15	(2.83) - Fewer cells because great damage

(c) Histology shows massive ulceration, surface damage, from irritant properties at high levels.

(d) Is it reversible?

Withdraw FM exposure and within 3 months

- 50% of rats have no dysplasia
- 100% of rats have no metaplasia.

Conclusion:

Massive cell damage leads to cell proliferation, leading ultimately to metaplasia.

LOW DOSE extrapolation.

Dependent on model used, dose for risk of 1/100,000 Ca. range from 2.3 ppm to 0.005 ppm.

CPSC upper limit (51/million) e.g.

1/4% of all human Ca. in UFFI homes due to UFFI.

- based on time averaged dose, e.g.

20 ppm for 1 hour = 1 ppm for 20 hours.

which from further analysis of animal studies is clearly inappropriate!

APPENDIX E.—LETTER TO HON. BERKLEY BEDELL FROM DR. EILEEN SCHELL REGARDING MASSACHUSETTS COURT DECISION, AUG. 10, 1982

THE EXECUTIVE OFFICE OF
Consumer AFFAIRS

Dr. Eileen Schell, Secretary

Commonwealth of Massachusetts
Executive Office of Consumer Affairs
One Ashburton Place, Room 1411
Boston, Massachusetts 02108

August 10, 1982

The Honorable Berkley Bedell, Chairman
Subcommittee on Energy, Environment, Safety
and Research
U.S. House of Representatives
Rayburn House Office Building
Washington, D.C. 20515

Dear Chairman Bedell:

It is our understanding that there was some confusion over the status of the Massachusetts ban on urea formaldehyde foam insulation (UFFI) at the August 4, 1982 hearing on H.R. 6391, H.R. 6389 and H.R. 6390. Unfortunately, we were not given notice of these hearings by the Subcommittee. Contrary to what you may have been informed, the ban in Massachusetts has NEVER been lifted and remains in effect at this time.

Public Health Commissioner, Dr. Alfred L. Frechette, ordered a statewide ban on the sale of UFFI effective November 14, 1979. The ban was ordered under the authority of the Hazardous Substances Act, Chapter 94B, of the Massachusetts General Laws. The decision was based upon over 7,000 pages of testimony and documents presented at public hearings. Superior Court Judge John Ronan ruled the ban invalid and issued an order to that effect on January 29, 1982. However, on that same date Judge Ronan granted a temporary stay of his order that would have lifted the ban. That stay was subsequently continued in effect by Judge Raya Dreben of the Appeals Court, and remains in effect until further order of that Court. On March 4, 1982, after all the Industry plaintiffs (including the Formaldehyde Institute) in the litigation advised the Appeals Court that they had no objection to the stay continuing in effect for the indefinite future pending appeal, Judge Dreben approved this agreement as a stipulation in the case. Therefore, the ban was never lifted. In October, the full bench of this Commonwealth's highest Court, the Supreme Judicial Court, will hear this case on appeal. The ban remains in effect as it has since 1979.

It is indeed unfortunate that it appears that misinformation has found its way to the Subcommittee on this matter. We hope that this clarification will assist you.

Sincerely,

Eileen Schell

Eileen Schell
Secretary of Consumer Affairs

ES/zm
cc: Representative Silvio O. Conte
Senator Paul Tsongas
Mark Rosenberg
James Kulikowski

TELEPHONE:
Self-Help Consumer Line 617/727—7780
Administration 617/727—7755

Consumer self-help Affairs

APPENDIX F.—ADDITIONAL MATERIAL SUBMITTED FOR THE RECORD BY HON. BERKLEY BEDELL

EXHIBIT 1

BERKLEY BEDELL, IOWA
CHAIRMAN

NICHOLAS MAVROULES, MASS.
CHARLES HATCHER, GA.
DENNIS E. ECKART, OHIO

SILVIO O. CONTE, MASS.
JOHN HILER, IND.
GUY V. MOLINARI, N.Y.

MARC H. ROSENBERG
SUBCOMMITTEE STAFF DIRECTOR
202-225-8944

JAMES M. PULKOWSKI
MINORITY SUBCOMMITTEE COUNSEL
202-225-4341

United States House of Representatives
Committee on Small Business
Subcommittee on Energy, Environment, and
Safety Issues Affecting Small Business
B-363 Rayburn House Office Building
Washington, D.C. 20515

July 28, 1982

Ms. Nancy Harvey Steorts, Chairman
Consumer Product Safety Commission
1111 18th Street, N.W.
Washington, D.C. 20257

Dear Madam Chairman:

The Subcommittee on Energy, Environment, Safety and Research of the Committee on Small Business has scheduled a hearing on Wednesday, August 4, on two bills, H.R. 6389 and H.R. 6391, to provide relief to homeowners from urea-formaldehyde foam insulation. Of great importance in the Subcommittee's consideration of these bills is information on the number of homeowners who might in fact seek relief in the form of low-interest loans under these bills. Given the consideration that the Commission has given to these issues and the expertise it has developed, the Subcommittee would appreciate any assistance the Commission might render in order to get some idea of the possible demand for a low-interest loan program for UF foam insulation replacement.

In particular, the Subcommittee would appreciate the Commission's best answers to the following questions:

1) How many homes have been insulated with UF foam?

2) Over what period has the Commission investigated the effects of UF foam?

3) During the Commission's consideration of the petition to ban UF foam, how many comment letters were received?

4) Of those comment letters, how many were written by homeowners complaining of adverse health effects?

5) Of the comment letters, how many were written by homeowners complaining of devaluation of property values either as a result of UF foam insulation or as a result of the Commission's proposed ban?

6) Has there been any changes in the trends described above since the Commission's ban was announced?

7) Does the Commission keep track of calls received over its UF foam insulation hot line?

8) If so, how many calls have been received?

9) How many of these calls have complained of adverse health effects?

10) How many have indicated no adverse health effects?

11) How many have indicated they are experiencing devaluation of their property?

12) Does the Commission have any estimates of the total number of people experiencing adverse health effects as a result of installation of UF foam insulation in their houses?

13) Does the Commission have any estimates of the total number of people experiencing property devaluation as a result of installation of UF foam insulation or the Commission's ban?

The Subcommittee apologizes for the lateness of this request. However, the requested information is vital to the Subcommittee's consideration of the aforementioned bills, and the Subcommittee would ask the Commission to make every effort to provide as complete a set of answers as is possible in time for the Subcommittee's hearing, either in writing or in the form of testimony at that hearing.

With warm personal regards,

Sincerely yours,

Silvio O. Conte
Ranking Minority Member

Berkley Bedell
Chairman

EXHIBIT 2

UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION

AUG 3 1982

The Chairman

The Honorable Berkley Bedell
The Honorable Silvio O. Conte
Subcommittee on Energy, Environment,
and Safety and Research
U.S. House of Representatives
B-363 Rayburn Office Building
Washington, D.C. 20515

Dear Mr. Bedell and Mr. Conte:

This is in reply to your letter of July 28, 1982, requesting that we provide you with answers to certain questions related to urea-formaldehyde foam (U.F.) insulation to be used by your subcommittee during its scheduled hearing on August 4, 1982.

Below are the answers to the questions in your letter.

1. QUESTION: How many homes have been insulated with U.F. foam?

ANSWER: Based on what are believed to be the most reasonable estimates, approximately 435,000 residences were insulated with U.F. foam from 1975 through 1981. These years accounted for nearly all installations of the product in this country. However, given the uncertainties involved in making these estimates, and the lack of installation data before 1975, a reasonable approximation of total residential installations may range as high as 500,000.

2. QUESTION: Over what period of time has the Commission investigated the effects of U.F. foam?

ANSWER: Since 1979, the staff has been actively gathering and assessing all available information on U.F. foam insulation and on formaldehyde in general.

In March, 1980, we received the report of the National Academy of Sciences which concluded that there was no population threshold for the irritant effects of formaldehyde. The Commission held four public hearings across the country between December 1979, and February 1980, at which many manufacturers, installers, consumers, state and local government representatives, and scientists testified with respect to the acute health problems associated with U.F. foam.

The first information on the potential for a carcinogenic hazard associated with formaldehyde came in October, 1979, when representatives of the Formaldehyde Institute, an industry trade

association, informed the Commission that preliminary results from the bioassay at the Chemical Industry Institute of Toxicology showed that rats exposed to 15 parts per million of formaldehyde had begun developing cancer in the twelfth month of the study. The Federal Panel on Formaldehyde, formed under the auspices of the National Toxicology Program to review the available information on formaldehyde, submitted their report to the Commission in late November, 1980. The report concluded that formaldehyde should be presumed to pose a carcinogenic risk to humans.

Thus, the Commission staff has been actively investigating the effects of U.F. foam insulation since 1979.

3. QUESTION: During the Commission's consideration of the petition to ban U.F. foam, how many comment letters were received?

ANSWER: The Commission was petitioned in 1976 to develop a mandatory standard for U.F. foam insulation. In June, 1980, the Commission proposed a disclosure statement to be provided to prospective purchasers of U.F. foam insulation. The proposed statement contained cautionary language about the possible adverse health effects associated with U.F. foam.

In February, 1981, the Commission decided that a disclosure statement was inadequate to protect the public from the risk of injury associated with the release of formaldehyde from U.F. foam and, therefore, proposed a ban and denied the 1976 petition to develop a mandatory standard. In response to this proposal, the Commission received 298 letters of comment.

In November, 1981, the Commission published in the Federal Register for public comment, additional scientific, technical and economic information related to the proposed ban. The Commission received an additional 77 letters of comment to this publication.

Thus, in total, the Commission received 375 letters of comment on the proposed ban of U.F. foam insulation.

4. QUESTION: Of those comment letters, how many were written by homeowners complaining of adverse health effects?

ANSWER: The Commission received 87 letters of comment from homeowners describing adverse health effects to themselves or members of their family attributed to formaldehyde released from U.F. foam.

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5. QUESTION: Of the comment letters, how many were written by homeowners complaining of devaluation of property values either as a result of U.F. foam insulation or as a result of the Commission's ban?

ANSWER: The Commission received 22 letters of comment from homeowners which specifically mentioned their concern that their homes would be devalued as a result of it containing U.F. foam. Some of the letters specifically attributed the devaluation to the Commission's proposed ban, while others attributed it to the fact that they were experiencing health problems and they believed no one else would want to purchase their home. However, most of the consumers who commented on reduced property values mainly expressed a concern that reductions were likely or possible, not that they had evidence of reduced values from putting their homes on the market. Many of these commenters may have been alarmed by U.F. foam industry predictions of $10,000 to $20,000 decrease in property values from a ban; these predictions received wide distribution in the press.

6. QUESTION: Has there been any changes in the trends described above since the Commission's ban was announced?

ANSWER: The Commission does not have a formal method to quantify the trends of consumer reaction before and after the ban of U.F. foam in terms of adverse health effects or property devaluation. However, soon after the ban was finalized, the publicity surrounding the Commission action resulted in a marked increase in consumer inquiry, both in letters and phone calls to the Commission's Hotline. These inquiries related to a wide variety of concerns by homeowners with U.F. foam. As might be expected, many of these were concerns of potential health effects and property devaluation.

7, 8. QUESTIONS: Does the Commission keep track of calls received over its U.F. foam insulation hotline? If so, how many calls have been received?

ANSWER: The Commission's Hotline is available for consumer inquiry regarding any consumer product, not just U.F. foam. The total number of Hotline calls is recorded on a daily basis but is not usually broken down by product.

The Commission staff estimates that since early February, 1982, just prior to the Commission's decision to ban U.F. foam, the Hotline has received approximately 16,500 calls concerning formaldehyde. The overwhelming majority of these calls concerned U.F. foam. Some calls were received concerning formaldehyde in other products such as particleboard.

9, 10, 11. QUESTIONS: How many of these calls have complained of adverse health effects? How many have indicated no adverse health effects? How many have indicated they are experiencing devaluation of their property?

ANSWERS: During the period since early February, 1982, 75 formaldehyde complaints were taken over the Hotline alleging adverse health effects attributed to formaldehyde from U.F. foam. We do not know what portion of the estimated 16,500 calls indicated no adverse health effects or property devaluation since the calls are not categorized in this manner. However, we are aware of a large number of calls from consumers inquiring about the health effects of formaldehyde from U.F. foam insulation although they themselves were not experiencing adverse health effects.

12. QUESTION: Does the Commission have any estimates of the total number of people experiencing adverse health effects as a result of U.F. foam insulation in their homes?

ANSWER: The Commission has kept records of complaints on adverse health effects from formaldehyde in U.F. foam reported orally and in writing to CPSC, and also complaints forwarded from 15 states. At the time the Commission voted to ban U.F. foam, over 2200 complaints had been received, affecting an estimated 5800 persons. Some additional complaints have been received since then.

It is not possible to estimate the total number of persons experiencing health problems from the complaint data. Such an estimate would require a sample survey of randomly selected homes insulated with U.F. foam. This costly survey was not conducted since it was believed the complaint data was sufficient to demonstrate the existence of a hazard.

13. QUESTION: Does the Commission have any estimates of the total number of people experiencing property devaluation as a result of installation of U.F. foam insulation or the Commission's ban?

ANSWER: Only if data from sales of homes were available, would it be possible to assess the effect of the presence of U.F. foam, or the Commission's ban, on property values. The Commission has little market data of this type. Even if information on sales prices of U.F. foamed homes were available, the task of assessing the impact of the presence of U.F. foam would be complicated by other factors, such as mortgage rates, the level of economic activity, and market expectations, factors which all influence resale prices of homes. In recent months, high mortgage rates and the recession have depressed the number of sales of homes and the prices sellers receive. Isolating these effects from possible effects on resale prices that are the result of the presence of U.F. foam is not possible at this time.

I hope this information is responsive to your request and will be useful for the upcoming hearing. If you have any additional questions, please feel free to contact us.

Sincerely,

Nancy Harvey Steorts

Nancy Harvey Steorts
Chairman

APPENDIX G.—LETTER TO HON. BERKLEY BEDELL FROM ANNE C. AVERYT, CONSUMER FEDERATION OF AMERICA, AUG. 9, 1982

Consumer Federation of America

August 9, 1982

The Honorable Berkley Bedell
Subcommittee on Energy, Environment,
and Safety and Research
U.S. House of Representatives
B-363 Rayburn Office Building
Washington, DC 20515

Dear Mr. Bedell:

Thank you for the opportunity to testify before your Subcommittee last week in support of Representative Conte's bill to provide assistance to UFFI homeowners.

I have attempted to find some statistics that would be helpful in estimating the number of homeowners who have been adversely affected by UFFI. Unfortunately, representative figures for the United States are difficult to obtain. The Minnesota Department of Health did samplings in UFFI homes if a complaint was filed along with a doctor's certificate of adverse health effects. Between February 1, 1979 and July 31, 1980, they sampled 148 homes, 87 of which had urea-formaldehyde insulation that was less than two years old. In these homes the range of formaldehyde emissions was between 0.0 and 6.89 ppm. In the homes with insulation more than two years old, the range of formaldehyde emissions was 0.0 to 0.33 ppm. The Health Department does not have the figures broken down as to how many homes had levels below or above 0.1 ppm. The Department lost its funding for the testing program at the end of July, 1980 and have not subsequently kept records of complaints. They also have no estimate of the total number of homes in their state that might have been insulated with urea-formaldehyde foam insulation.

The Consumer Product Safety Commission likewise has no estimates of the number of UFFI homes which represent a health problem. Prior to its ban of UFFI, the CPSC had received more than 2,200 health complaints. The total number of UFFI homes in the U.S. is estimated at upwards of 500,000. The CPSC refuses, however, to make any statistical estimates of affected homes based on these figures.

I have also done some checking as to the approximate cost for having a UFFI home tested for emission levels. The American Council of Independent Laboratories, Inc., a Washington-based trade association, referred us to the Lancaster Laboratory in Lancaster, PA. Their spokesman said the lab's fees for such monitoring ranged from $35 to $100 depending on the distance of travel and the level of formaldehyde measured. Monitoring for low levels of formaldehyde takes more sophisticated equipment, and is more costly. The lab does extensive formaldehyde testing and felt its prices were representative of national levels.

I hope this information is helpful. If I can be of any further assistance, please contact me.

Sincerely,

Anne C Averyt

Anne C. Averyt
Product Safety Specialist

ACA/lrg

1314 14th Street, N.W. • Washington, D.C. 20005 • (202) 387-6121

APPENDIX H.—LETTER TO HON. BERKLEY BEDELL FROM WILLIAM D. NORTH, NATIONAL ASSOCIATION OF REALTORS, JULY 29, 1982

NATIONAL ASSOCIATION OF REALTORS®

Executive Offices
430 North Michigan Avenue, Chicago, Illinois 60611
Telephone 312 329-8366

William D. North
Senior Vice President and General Counsel

July 29, 1982

The Honorable Berkley W. Bedell, Chairman
Subcommittee on Energy, Environment
and Safety Issues Affecting Small Business
House of Representatives
United States Congress
Washington, DC 20510

Re: August 4, 1982, Hearing in Reference to H.R. 6389
and H.R. 6391

Dear Chairman Bedell:

On behalf of the NATIONAL ASSOCIATION OF REALTORS®, an organization representing some 600,000 men and women engaged in the real estate business throughout the United States, I sincerely appreciate the invitation of your Subcommittee to participate in the hearings you have scheduled for August 4 concerning subject legislation. Since circumstances beyond my control preclude my being present to testify, and since I have had the responsibility for assuring Association membership compliance with the Urea Formaldehyde Foam Insulation (UFFI) Rule, should it become effective on August 9, 1982, it was our judgment that my comments should take the form of this letter.

The National Association and its members were deeply concerned when notified by the Consumer Product Safety Commission of the proposed Rule. This concern was based on two considerations:

First, the problems we anticipated in assuring that proper disclosure of the Rule and proper identification of property insulated with UFFI could be accomplished, and

Second, the almost certain financial impact of the Rule on the value of properties in which UFFI was installed.

To resolve the first problem, we undertook, as early as April of this year, to open intensive discussions with the Consumer Product Safety Commission to develop a notification program by which the members of the NATIONAL ASSOCIATION OF REALTORS®, who constitute a significant majority of the active real estate brokers and salespersons in the country, could

REALTOR® - is a registered collective membership mark which may be used only by real estate professionals who are members of the NATIONAL ASSOCIATION OF REALTORS® and subscribe to its strict Code of Ethics.

assure that buyers are made aware of the presence of UFFI and that sellers are appropriately advised of the importance of compliance with the Commission's Rule. As a consequence of this program, all members of the National Association are currently being informed of their disclosure responsibilities under the law, are being provided with appropriate forms of notice, and are being advised of the procedures to be followed in listing and selling properties subject to the Rule.

The National Association has been commended by the Consumer Product Safety Commission for its prompt action and cooperation in this matter.

The second problem, our concern with the impact of the Rule on property values, has yet to be addressed except, to the best of our knowledge, by the legislation which is the subject of your August 4 hearing. Because of the potential magnitude of the impact of the Rule on property values, and because the real estate broker functions not as an owner, but as an agent, resolution of this problem is quite beyond the capacity of the National Association and its membership. By the Commission's own estimates, the cost of removing UFFI where it exists and is producing formaldehyde vapors, is in the range of $5,000-$20,000. Our evaluations confirm these figures to be essentially realistic. This means, however, that every property in which UFFI has been installed is potentially vulnerable to a reduction in value of this amount and this reduction could be greater if, as has been the experience in the case of some properties in Massachusetts, where for a time UFFI was banned under state law, the public perception of the UFFI problem has a psychological impact on demand.

The National Association has not been able, to date, to develop sufficient sales data to evaluate the impact of the Rule. Nor have appraisers been willing to assess the impact, except to indicate that the cost of "removal" of UFFI would tend to be at least one measure of the value reduction.

Certainly, the NATIONAL ASSOCIATION OF REALTORS® approves and supports every effort to eliminate health hazards from home and business environments in this country. For this reason, the National Association strongly supported the federal prohibition on the use of lead-based paint adopted some years ago.

But, at the same time, the National Association perceives that a seller who is incapable of obtaining the money required to remove UFFI where it has been installed in ignorance of its toxic properties, may find that his property is either unsalable, or that his entire equity is dissipated. Given the number of homes in which UFFI has been installed, which ranges somewhere between 500,000 and 1,000,000 units, the potential impact of the rule on the value of most families' primary asset is very significant and to some property owners could be catastrophic.

Under the existing budgetary constraints adopted by this Congress, it is difficult for the National Association to assess whether relief in the form of the loans proposed by subject legislation is the most economical approach or the one most compatible with those budgetary constraints and objectives, but this Association and our members can attest to the fact that the Commission's Rule represents a major hardship on the homeowners of America, which should merit serious consideration.

I hope that the foregoing statement is of assistance to your Subcommittee in its deliberations.

Yours very truly,

William D. North

WDN/bjm

APPENDIX I.—PREPARED STATEMENT OF THE NATIONAL HOMEOWNERS ASSOCIATION

The National Homeowners Association, Washington, D.C., an organization representing the interests of America's homeowners, appreciates this opportunity to submit the following testimony regarding remedies for owners of homes insulated with urea formaldehyde foam (UF foam).

NHA feels that by enacting tax credits for installing residential insulation and approving standards for urea formaldehyde use, the Federal Government encouraged the use of UF foam insulation and, thus, has a responsibility to assist those homeowners who have suffered from using this type of insulation.

To a far greater extent and with disregard for the concern of there being safety hazards associated with their product, the urea formaldehyde industry likewise promoted its use. The industry argued against the existence of significant hazards until, in the face of overwhelming evidence that had existed for years, their product was banned. Thus, the urea formaldehyde manufacturers and installers share significant responsibility for the damages suffered by homeowners who have installed UF foam.

The owners of homes insulated with UF foam rightfully deserve a means of undoing both the loss of property value and risk to their health that the insulation's presence presents. The most effective means is to remove the insulation.

Accordingly, NHA urges this subcommittee to take action which would direct the Federal Government and the responsible urea formaldehyde foam manufacturers and installers to assume responsibility for the removal and replacement of urea formaldehyde insulation in those cases where the affected homeowner or home purchaser so requests.

APPENDIX J.—PREPARED STATEMENT OF THE NATIONAL CONSUMERS LEAGUE

The National Consumers League is a non-profit membership organization which was founded in 1899 and whose purposes include representing consumers in both public and private decision-making arenas and providing consumer information and education programs. In the last decade, NCL's interest and involvement in insulation issues has been quite extensive. These activities have included: monitoring and commenting on the Consumer Product Safety Commission's (CPSC) cellulose insulation labeling program, acting as the consumer intervenor in the Federal Trade Commission (FTC) hearing on the Trade Regulation Rule Concerning Labeling and Advertising of Residential Insulation Materials and representing consumers on the American Society for Testing and Materials (ASTM) Technical Committee (C-16) on Thermal and Cryogenic Insulating Materials, a committee which develops voluntary standards for insulation. With respect to urea formaldehyde foam insulation (UFFI), NCL was a member of the ASTM Subcommittee which attempted to develop a standard; we presented testimony at the CPSC hearings on UFFI in Hartford, Connecticut; we submitted comments on the CPSC proposed mandatory warning label, comments in support of the proposed ban of UFFI and we will be, with the court's permission, submitting an amicus curiae brief in support of the Commission's actions and findings, under Section 8 of the Consumer Product Safety Act (CPSA), in banning UFFI.

While the ban of UFFI will protect consumers against the carcinogenic and other acute hazards resulting from UFFI offgassing, the CPSC's hands are tied with respect to providing assistance or remedies retroactively for the approximately 500,000 homeowners who already have had UFFI installed in their homes. Additionally, private civil lawsuits, a traditional remedy for consumers, are unlikely to be effective means of redress for those homeowners, since the number of potential defendants (both manufacturers and installers) are limited due to business failures which have occurred in the wake of the UFFI problem. Neither are states and cities, with their very severe financial problems, in a position to be of real assistance. Therefore, Congress should act, for it is the only body that can provide appropriate relief.

NCL wholeheartedly supports the concept of offering assistance to these victims. We believe that whatever legislation is passed must adequately address the problem, while at the same time protect against opening the treasury doors to those whose needs are unsubstantiated.

UFFI insulated homes can be divided into two categories. First, there are those homes that have a demonstrable offgassing problem, thus putting at risk occupants who could suffer from the chronic and acute effects of formaldehyde offgassing from the UFFI. People who have lived in or might move into such homes may not be able to live in these houses due to formaldehyde sensitization. It is this group, with its UFFI-related medical expenses, that needs the most help, and that is the group that Congressman Rosenthal's bill (H.R. 6524) addresses. We support it wholeheartedly.

The second category includes those homes whose owners face a potentially severe economic problem—the devaluation of their property due to the simple fact that their house is insulated with UFFI. Public attention to the problems of UFFI and the subsequent ban has unequivocally caused, in a number of cases, either a devaluation in the house's market value or the inability of the homeowner to find any buyers at all. Congressman Conte's bill (H.R. 6391) addresses this group, and we support its enactment, as well as H.R. 6524. We would suggest that in mark up the bill be amended to include definitions of key terms, especially the term "restoration".

Comparatively, Congressman Broomfield's bill (H.R. 6437) is deficient, and does not address the problem as adequately as the others.

Because of the dual problems of health expenses and economic devaluation resulting from ownership of a UFFI insulated home, NCL would thus support a bill that merged the provisions of H.R. 6391 and H.R. 6524; we would also support each of them, individually. The attached chart is included to provide an overview of the three bills and to help highlight areas in each bill which need strengthening.

UFFI HOMEOWNERS BILLS	PROVISIONS FOR CONSUMER	PROVISIONS FOR BUSINESS	OTHER MAJOR PROVISIONS	ADDRESSESS: Removal expenses	ADDRESSESS: Medical expenses	ADDRESSESS: Other expenses	EFFECTIVE DATE	Definitions included:	COMMITTEE(S) REFERRED TO:
CONTE H.R. 6391	Amends Small Business Act to make loans for removal of UFFI from any residence, including restoration of such residence which is appropriate as a result of the removal Loan cannot exceed $10,000 Interest rate = rate prescribed for in SBA - cannot use UFFI or its installation to reduce energy conservation credit dollar limit - permits deduction of expenses for removal or restoration as a medical expense	Amends Small Business Act and authorizes for 1983 and 1984 $10 million (each year) for direct and immediate participation loans to businesses that manufacture or install UFFI	denial of double benefit - can't deduct expenses twice under different sections. carryover of excess deduction - if it (excl.) exceeds modified taxable income for that year - can carry over the excess into the next year	YES	NO	NO	Applies to expenses paid after December 31, 1981. homeowners loans take effect on date of enactment business loans take effect Oct. 1, 1982	NONE	SMALL BUSINESS and WAYS and MEANS
ROSENTHAL H.R. 6524	Amends the I.R. Code to allow a tax credit for 100% of the removal expenditures not to exceed $10,000. UFFI must be in a dwelling that is in U.S., used by taxpayer as principal residence and has form. gas levels in excess of 0.1 part per million or gas levels which are established by medical evidence to cause form. health problems. tax credit for 100% of formaldehyde-related medical expenses not to exceed $5,000	NONE	at request of homeowner the designated Federal agency must provide device for reading gas level in dwelling. If it is .1 ppm then federal agency must do follow-up tests CPSC shall conduct a survey of public schools to determine if any of them have UFFI & submit report to Congress. Congressional Budget Office shall conduct study to determine avg. loss of value to owners of manuf. homes & submit report	YES	YES	Fed. gov't must supply equip. to test house and must do the follow-up tests if needed	applies to amounts paid or incurred on or after January 1, 1979 CPSC survey & CBO Study due to Congress 180 days after date of enactment	-"qualified insulation removal expenditures" -"adopts certain rules of the I.R. Code" -"eligible individual" -"formaldehyde-related medical expenses" -"dwelling unit" -"designated Fed. agency"	WAYS and MEANS and BANKING, FINANCE and URBAN AFFAIRS
BROOMFIELD H.R. 6417	Amends I.R. Code to permit a tax credit of 50% of removal removal costs not to exceed $5,000.	NONE	NONE	YES	NO	NO	applies to expenditures made after December 31, 1981.	-"qualified insulation removal expenditures" -adopts certain rules of the I.R. Code	WAYS and MEANS